

IV. TRENDS IN USE IN CERTAIN PESTICIDE CATEGORIES

Reported pesticide use in California in 2003 totaled 175 million pounds, an increase of 7.2 million pounds from 2002. Production agriculture, the major category of use subject to reporting requirements, accounted for most of the overall increase in use. Applications for production agriculture increased by 6.2 million pounds.

The active ingredients with the largest uses by pounds were sulfur, petroleum oils, metam-sodium, and methyl bromide. Sulfur use decreased by 46,000 pounds (-0.1 percent) but was still the most highly used pesticide in 2003, both in pounds applied and acres treated. By pounds, sulfur accounted for 30 percent of all reported pesticide use. Sulfur is a natural fungicide favored by both conventional and organic farmers. Petroleum oil use decreased by 209,000 pounds (-1 percent), metam sodium use decreased by 322,000 pounds (-2 percent), and methyl bromide use increased by 834,000 million pounds (13 percent).

Major crops or sites that showed an overall increase in pesticide pounds applied from 2002 to 2003 included almonds (1.4 million pounds increase), strawberries (1.0 million pounds), carrots (0.8 million pounds), rights-of-way (0.6 million pounds), and rice (0.5 million pounds). Major crops or sites with decreased pounds applied included wine grapes (0.6 million pounds), table and raisin grapes (0.6 million pounds), structural pest control (0.3 million pounds), potatoes (0.3 million pounds), and lemons (0.2 million pounds).

DPR data analyses have shown that pesticide use varies from year to year depending upon pest problems, weather, acreage and types of crops planted, economics, and other factors. For most of the 12 crops investigated, pest problems, especially diseases, were higher in 2003 than in 2002 in several areas due to the wet and cool spring in 2003. Prices for most of the 12 crops improved in 2003, which may have also been an incentive to use more pesticides to protect valuable crops. However, acreage of most of the 12 crops decreased.

Pesticide use is reported as the number of pounds of active ingredient and the total number of acres treated. The data for pounds include both agricultural and nonagricultural applications; the data for acres treated are primarily agricultural applications. The number of acres treated means the cumulative number of acres treated; the acres treated in each application are summed even when the same field is sprayed more than once in a year. (For example, if one acre is treated three times in a season with an individual active ingredient, it is counted as three acres treated in the tables and graphs in Sections IV and V of this report.)

Use increased in most pesticide categories. Most of the increase in pounds applied was due to increases in mineral oil and the fumigants methyl bromide and 1,3-dichloropropene. (Fumigants are applied at high rates, in part, because they treat a volume of space rather than a surface area such as the leaves and stems of plants. Thus, the pounds applied are large even though the number of applications or number of acres treated may be relatively small.) Some of the major statistical changes from 2002 to 2003 include:

- Chemicals classified as reproductive toxins increased in pounds applied from 2002 to 2003 (up 480,000 pounds or 2.0 percent) and increased slightly in cumulative acres treated (up 22,000 acres or 0.9 percent). The increase in pounds was due mostly to the fumigant methyl bromide. Most of this increase can be attributed to treatment on newly planted and replanted almond acres in Kern County.

- A similar pattern appeared for chemicals classified as carcinogens. Use of these chemicals increased in overall pounds applied (up 1.9 million pounds or 7.4 percent) and in cumulative acres treated (up 390,000 acres or 11 percent). The increase in pounds was mainly due to increase in uses of the fumigant 1,3-dichloropropene but the increase in acres treated was due mainly to the fungicides maneb, iprodione, mancozeb, and captan.
- Use of insecticide organophosphate and carbamate chemicals, which includes compounds of high regulatory concern, continued to decline by pounds, decreasing by 680,000 pounds (7.9 percent) although acres treated was nearly the same, down only 3,000 acres (0.05 percent). Use of chlorpyrifos increased; the largest decreases in use were molinate, thiobencarb, and diazinon.
- Use of chemicals categorized as ground water contaminants was nearly the same in 2003 as in 2002. Use by pounds increased 38,000 pounds applied (1.7 percent), but cumulative acres treated decreased by about 5,000 acres (0.3 percent). Most of the increase in pounds was due to diuron and simazine.
- Chemicals categorized as toxic air contaminants, another regulatory concern, increased by 2.6 million pounds applied (7.9 percent). Cumulative acres treated increased by about 367,000 acres (12 percent). Most of the increase in pounds was due to increases in methyl bromide and 1,3-dichloropropene; most of the increase in acres was due to maneb and 2,4-D.
- Use of reduced-risk pesticides increased considerably, by 311,000 pounds applied (41 percent) and by 1.8 million acres treated (47 percent). The biggest increase was in use of the insecticide indoxacarb.
- Biopesticide use decreased by 81,000 pounds (7.2 percent) but increased by 174,000 acres treated (8.1 percent). Use of the biopesticides potassium bicarbonate, GABA, and *Bacillus thuringiensis* increased; the decrease in pounds was due mostly to a decrease in use of liquefied nitrogen.

Since 1994, the reported pounds of pesticides applied have fluctuated from year to year with no general increasing or decreasing trend. An increase or decrease in use from one year to the next or in the span of a few years does not necessarily indicate a general trend in use; it simply may reflect normal variations. Short periods of time (three to five years) may suggest trends, such as the increased pesticide use from 1994 to 1998 or the decreased use from 1998 to 2001. However, statistical analyses from 1994 to 2003 do not indicate a significant trend of either increase or decrease in pesticide use.

To improve data quality when calculating the total pounds of pesticides, DPR excluded values that were so large they were probably in error. The procedure to exclude probable errors involved the development of complex error-checking algorithms, a data improvement process that is ongoing.

Over-reporting errors have a much greater impact on the numerical accuracy of the database than under-reporting errors. For example, if a field is treated with 100 pounds of a pesticide active ingredient and the application is erroneously recorded as 100,000 pounds (a decimal point shift of three places to the right), an error of 99,900 pounds is introduced into the database. If the same

degree of error is made in shifting the decimal point to the left, the application is recorded as 0.1 pound, and an error of 99.9 pounds is entered into the database

To provide an overview, pesticide use is summarized for eight different categories from 1993 to 2003 (Tables 3–10 and Figures 1–8). These categories classify pesticides according to certain characteristics such as reproductive toxins, carcinogens, or reduced-risk characteristics.

The statistical summaries detailed in these categories are not intended to serve as indicators of pesticide risks to the public or the environment. Rather, the data supports DPR regulatory functions to enhance public safety and environmental protection. (See “How Pesticide Data are Used” on page iv.) The different pesticide categories, described more fully, are:

1. Pesticides listed on the State's Proposition 65 list of chemicals "known to cause reproductive toxicity."
2. Pesticides listed by U.S. EPA as B2 carcinogens or on the State's Proposition 65 list of chemicals "known to cause cancer."
3. Pesticides that are cholinesterase inhibitors, that is, organophosphate and carbamate chemicals.
4. Pesticides on DPR's groundwater protection list (section 6800 (a) of the California Code of Regulations, Title 3, Division 6, Chapter 4, Subchapter 1, Article 1) and norflurazon, which DPR is recommending be listed as a restricted material.
5. Pesticides from DPR's toxic air contaminants list (California Code of Regulations, Title 3, Division 6, Chapter 4, Subchapter 1, Article 1, section 6860).
6. Oil pesticides, which may include some chemicals on the State's Proposition 65 list of chemicals “known to cause cancer” but which also serve as alternatives to high-toxicity pesticides.
7. Active ingredients contained in pesticide products that have been given reduced-risk status by U.S. EPA.
8. Biopesticides, which include microorganisms and naturally occurring compounds, or compounds essentially identical to naturally occurring compounds that are not toxic to the target pest (such as pheromones).

USE TRENDS OF PESTICIDES ON THE STATE'S PROPOSITION 65 LIST OF CHEMICALS THAT ARE "KNOWN TO CAUSE REPRODUCTIVE TOXICITY"

Table 3A. The reported **pounds** of pesticides used which are on the State's Proposition 65 list of chemicals that are "known to cause reproductive toxicity." Use includes both agricultural and reportable nonagricultural applications. Data are from the Department of Pesticide Regulation's Pesticide Use Reports.

Active Ingredient	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
1080	<1	<1	1	<1	<1	<1	<1	<1	<1	<1
2,4-DB ACID	0	0	0	1,697	6,932	12,397	11,453	16,954	9,393	6,408
AMITRAZ	70,363	75,018	55,459	66,439	13,563	7,558	8,087	263	154	115
ARSENIC PENTOXIDE	86,445	83,814	205,089	64,372	50,899	245,238	91,267	259,386	194,650	165,709
ARSENIC TRIOXIDE	<1	<1	<1	<1	1	1	<1	<1	<1	<1
BENOMYL	141,586	189,943	148,433	114,406	227,690	133,109	118,601	76,739	28,978	7,094
BROMACIL, LITHIUM SALT	11,085	6,517	17,381	9,141	4,686	4,162	4,478	3,217	4,016	3,025
BROMOXYNIL OCTANOATE	127,154	119,407	148,480	115,368	120,877	120,338	116,125	78,484	72,759	76,927
CHLORSULFURON	1,228	1,485	1,623	2,218	3,046	1,445	2,590	1,203	2,190	8,690
CYANAZINE	532,688	641,057	566,632	470,838	277,313	180,487	50,468	17,250	7,178	37
CYCLOATE	51,035	49,138	44,628	55,459	62,753	49,096	37,408	31,785	34,347	30,080
DICLOFOP-METHYL	38,276	16,540	79,874	41,130	24,783	18,710	21,696	11,765	5,058	9,309
EPTC	765,576	660,185	703,996	579,245	393,031	448,883	323,254	276,782	253,887	141,756
ETHYLENE OXIDE	3	0	0	0	31	2	6	3	0	0
FENOXPAPRO ETHYL	5,023	3,731	3,974	3,895	1,504	2,048	979	366	106	53
FLUAZIFOP-BUTYL	19,772	20,451	15,095	15,253	14,724	14,376	205	149	166	31
FLUAZIFOP-P-BUTYL	0	0	0	0	0	0	11,595	9,489	9,984	8,759
HYDRAMETHYLNON	227	807	1,741	5,456	3,183	2,267	2,495	2,381	2,741	2,024
LINURON	79,950	84,937	84,335	84,621	82,170	78,046	65,511	58,173	61,994	60,128
METAM-SODIUM	11,122,361	14,975,528	15,253,924	14,969,732	13,729,306	16,774,246	13,218,764	12,545,403	15,137,719	14,815,687
METHYL BROMIDE	16,607,324	17,165,964	16,022,069	15,663,832	13,569,875	15,300,388	10,869,241	6,618,631	6,550,818	7,384,398
METIRAM	0	0	0	0	<1	0	0	2	0	1
MYCLOBUTANIL	69,941	85,525	89,087	94,375	129,773	94,626	96,175	83,995	76,655	83,465
NABAM	8	1	0	0	50	2	1	8	0	0
NICOTINE	457	228	298	258	83	93	21	17	2	2
NITRAPYRIN	150	639	114	49	407	150	192	16	89	117
OXADIAZON	20,488	21,458	25,260	23,196	21,959	19,399	18,256	15,905	16,692	12,550
OXYDEMETON-METHYL	111,347	120,101	106,612	115,781	89,789	122,912	110,797	99,756	96,357	93,789
OXYTHIOQUINOX	4,474	7,172	6,204	2,709	1,576	2,705	411	149	117	34
POTASSIUM DIMETHYL DITHIO CARBAMATE	47	0	0	15	24,795	0	0	0	23	28
PROPARGITE	1,742,736	1,770,065	1,743,278	1,816,028	1,385,327	1,504,268	1,331,979	1,159,792	972,371	1,054,607

Table 3A (continued). The reported **pounds** of pesticides used which are on the State's Proposition 65 list of chemicals that are “known to cause reproductive toxicity.”

Active Ingredient	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
RESMETHRIN	1,069	856	661	594	796	632	712	542	661	1,561
SODIUM DIMETHYL DITHIO CARBAMATE	337	1	0	0	8,279	355	1,315	173	0	0
STREPTOMYCIN SULFATE	6,165	9,619	9,494	9,605	14,950	9,406	10,820	7,554	5,990	8,588
TAU-FLUVALINATE	4,723	3,787	4,137	3,040	2,827	3,315	2,251	2,228	2,184	1,630
THIOPHANATE-METHYL	100,890	116,746	122,862	88,640	65,169	76,040	67,779	66,953	71,468	125,925
TRIADIMEFON	24,147	20,692	17,370	12,204	12,919	4,846	3,114	2,840	1,736	1,770
TRIBUTYLTIN METHACRYLATE	1,734	278	185	60	113	270	107	106	39	0
TRIFORINE	32,574	39,729	24,877	6,562	2,752	519	365	99	78	88
VINCLOZOLIN	33,661	48,270	60,286	46,908	54,719	52,731	35,658	32,208	22,164	18,568
WARFARIN	<1	<1	1	1	1	1	1	1	1	3
Grand Total	31,815,043	36,339,689	35,563,459	34,483,130	30,402,653	35,285,066	26,634,181	21,480,765	23,642,762	24,122,956

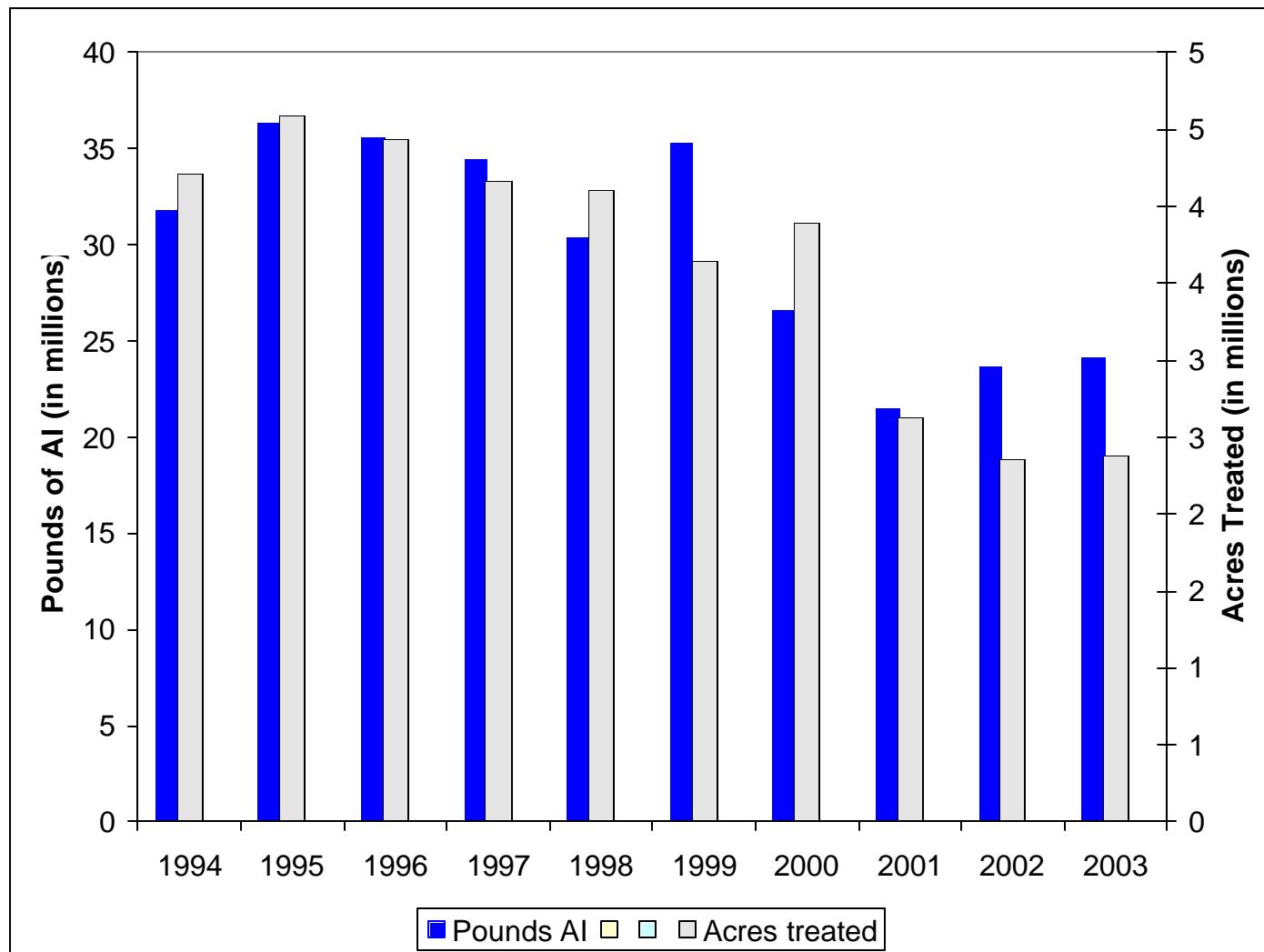
Table 3B. The reported **cumulative acres treated** with pesticides that are on the State's Proposition 65 list of chemicals "known to cause reproductive toxicity." Use includes primarily agricultural applications. The grand total for acres treated may be less than the sum of acres treated for all active ingredients because some products contain more than one active ingredient. Data are from the Department of Pesticide Regulation's Pesticide Use Reports.

Active Ingredient	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
1080	53	32	25	0	0	0	42	30	301	50
2,4-DB ACID	0	0	0	2,599	12,167	20,063	19,496	25,843	15,584	10,384
AMITRAZ	137,434	174,867	129,857	161,651	28,945	14,684	16,011	1,269	605	379
ARSENIC PENTOXIDE	660	0	0	0	0	0	709,893	56	0	0
ARSENIC TRIOXIDE	0	0	0	0	0	0	0	0	1	<1
BENOMYL	271,289	360,931	310,563	245,687	434,725	242,796	217,611	135,929	47,771	13,360
BROMACIL, LITHIUM SALT	0	0	0	0	40	40	30	0	0	0
BROMOXYNIL OCTANOATE	245,715	224,276	277,062	224,250	240,997	257,417	313,362	251,527	238,713	218,285
CHLORSULFURON	39,962	39,584	54,360	27,628	39,873	30,691	34,528	29,079	18,836	25,830
CYANAZINE	284,812	365,520	325,627	288,087	185,082	129,547	56,059	19,708	8,763	25
CYCLOATE	22,571	20,685	19,597	25,986	29,761	24,555	18,487	15,918	17,213	16,721
DICLOFOP-METHYL	47,273	19,314	89,276	47,217	28,296	21,442	24,470	14,198	6,259	11,257
EPTC	273,441	241,587	232,820	208,093	141,511	148,685	107,613	99,953	94,240	56,639
ETHYLENE OXIDE	0	0	0	0	194	31	41	0	0	0
FENOXAPROP ETHYL	33,712	24,153	25,540	24,439	10,480	13,824	8,847	3,820	1,327	839
FLUAZIFOP-BUTYL	90,378	80,726	58,367	54,192	55,734	51,114	137	144	98	0
FLUAZIFOP-P-BUTYL	0	0	0	0	0	0	41,780	34,283	40,966	28,325
HYDRAMETHYLNON	0	3	36	35	289	1,615	3,648	2,762	2,148	1,978
LINURON	97,887	105,284	104,772	110,067	112,122	111,009	86,317	81,801	86,914	85,427
METAM-SODIUM	183,625	199,457	215,899	198,395	154,309	186,300	146,847	125,263	141,357	142,396
METHYL BROMIDE	106,694	107,933	96,507	103,068	90,107	102,125	75,741	60,892	53,100	55,251
METIRAM	0	0	0	0	<1	0	0	7	0	<1
MYCLOBUTANIL	692,036	841,178	814,268	866,360	1,225,372	887,981	842,639	737,643	704,231	741,930
NABAM	0	0	0	0	55	20	0	60	0	0
NICOTINE	382	237	167	128	57	36	14	31	1	0
NITRAPYRIN	261	1,493	147	105	851	329	276	0	169	258
OXADIAZON	1,812	2,400	2,213	1,832	1,933	3,407	2,656	2,637	1,838	1,904
OXYDEMETON-METHYL	226,433	253,868	220,824	244,056	186,964	253,281	225,984	200,171	193,441	189,047
OXYTHIOQUINOX	6,410	10,000	8,768	5,896	5,306	2,152	817	250	182	71
POTASSIUM DIMETHYL DITHIO CARBAMATE	6	0	0	0	0	0	0	0	2	6
PROPARGITE	1,030,485	1,052,358	980,963	989,265	756,098	795,410	704,529	606,737	524,421	558,006

Table 3B (continued). The reported **cumulative acres treated** with pesticides that are on the State's Proposition 65 list of chemicals "known to cause reproductive toxicity."

Active Ingredient	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
RESMETHRIN	419	222	144	182	160	84,044	33	35	32	66
SODIUM DIMETHYL DITHIO CARBAMATE	0	0	0	0	253	20	0	60	0	0
STREPTOMYCIN SULFATE	58,703	84,111	84,999	89,336	131,936	76,414	97,019	62,184	52,180	63,444
TAU-FLUVALINATE	26,578	19,771	22,156	18,387	14,075	17,343	10,101	10,893	9,024	7,937
THIOPHANATE-METHYL	86,803	101,694	128,267	89,556	63,842	81,428	68,422	53,990	64,324	121,294
TRIADIMEFON	132,295	118,746	100,142	59,229	79,968	25,719	11,855	9,501	6,747	7,625
TRIBUTYLTIN METHACRYLATE	13	<1	1	<1	1	1	1	<1	0	0
TRIFORINE	64,069	76,411	53,589	17,455	6,352	1,279	751	244	203	196
VINCLOZOLIN	49,519	66,672	82,968	67,373	69,067	63,931	43,629	38,570	27,786	21,682
WARFARIN	192	151	541	382	310	99	556	101	449	632
Grand Total	4,211,923	4,593,665	4,440,467	4,170,939	4,107,177	3,648,813	3,890,242	2,625,528	2,359,227	2,381,245

Figure 1. Use trends of pesticides that are on the State's Proposition 65 list of chemicals that are “known to cause reproductive toxicity.” Reported pounds of active ingredient (AI) applied includes both agricultural and nonagricultural applications. The reported cumulative acres treated includes primarily agricultural applications. Data are from the Department of Pesticide Regulation's Pesticide Use Reports.



USE TRENDS OF PESTICIDES LISTED BY U.S. EPA AS CARCINOGENS OR BY THE STATE AS “KNOWN TO CAUSE CANCER”

Table 4A. The reported **pounds** of pesticides used that are listed by U.S. EPA as B2 carcinogens or that are on the State’s Proposition 65 list of chemicals “known to cause cancer.” Use includes both agricultural and reportable nonagricultural applications. Data are from the Department of Pesticide Regulation’s Pesticide Use Reports.

Active Ingredient	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
1,3-DICHLOROPROPENE	2,122	409,821	1,956,846	2,400,930	2,911,385	3,122,723	4,442,193	4,135,462	5,359,193	7,009,034
ACIFLUORFEN, SODIUM SALT	1	6	11	29	<1	10	<1	1	3	<1
ALACHLOR	42,854	41,119	45,733	51,259	46,264	29,789	36,468	29,431	28,666	24,913
ARSENIC ACID	27,571	37,206	53,777	59,835	52,558	48,029	11,906	12,023	4,976	318
ARSENIC PENTOXIDE	86,445	83,814	205,089	64,372	50,899	245,238	91,267	259,386	194,650	165,709
ARSENIC TRIOXIDE	<1	<1	<1	<1	1	1	<1	<1	<1	<1
CACODYLIC ACID	43,685	43,275	31,417	26,060	17,379	15,930	16,093	3,983	1,795	207
CAPTAN	608,658	734,314	918,588	799,878	1,559,136	965,922	642,757	399,263	392,205	499,973
CHLOROTHALONIL	832,288	1,125,790	1,053,319	779,328	1,181,163	753,840	680,735	522,212	605,016	712,761
CHROMIC ACID	120,822	117,092	286,521	89,931	71,109	343,543	128,642	363,205	272,300	232,064
CREOSOTE	871,469	444,461	491,044	259,086	1,752	4,873	9,879	4,700	9,018	3,384
DAMINOZIDE	6,775	6,763	7,944	11,028	10,306	9,411	9,138	11,323	10,048	10,156
DDVP	4,798	6,063	13,097	13,636	13,998	12,325	12,718	12,837	8,524	3,437
DI OCTYL PHTHALATE	83	<1	1	1	318	1,076	595	640	604	521
DIPROPYL ISOCINCHOMERONATE	2	1	3	<1	<1	0	<1	1	0	1
DIURON	1,234,507	1,054,409	1,265,426	1,228,114	1,504,268	1,188,640	1,343,727	1,107,421	1,303,108	1,343,596
ETHOPROP	51,270	51,104	27,955	23,842	27,949	26,196	16,119	19,046	16,531	28,419
ETHYLENE OXIDE	3	0	0	0	31	2	6	3	0	0
FENOXYCARB	1,492	1,673	712	65	552	71	88	86	53	32
FOLPET	3	2	<1	<1	<1	<1	<1	0	2	<1
FORMALDEHYDE	11,864	153,519	334,548	403,824	305,297	111,714	55,300	28,612	14,035	18,690
IPRODIONE	431,318	564,127	520,763	424,338	572,287	411,548	422,179	305,629	247,365	287,631
LINDANE	5,281	4,507	4,576	5,388	6,293	4,842	4,738	2,388	1,633	908
MANCOZEB	464,924	659,240	567,866	526,364	987,270	630,968	611,498	430,604	396,672	538,033
MANEB	912,903	1,257,122	1,328,318	1,081,124	1,596,876	1,045,567	1,203,483	817,059	851,643	1,026,685
METAM-SODIUM	11,122,361	14,975,528	15,253,924	14,969,732	13,729,306	16,774,246	13,218,764	12,545,403	15,137,719	14,815,687
METIRAM	0	0	0	0	<1	0	0	2	0	1
ORTHO-PHENYLPHENOL	11,027	14,892	10,349	15,962	11,248	8,600	8,516	4,016	15,205	5,141
ORTHO-PHENYLPHENOL, SODIUM SALT	46,825	30,830	33,539	25,389	32,315	29,019	31,681	27,071	25,249	20,857
OXADIAZON	20,488	21,458	25,260	23,196	21,959	19,399	18,256	15,905	16,692	12,550
OXYTHIOQUINOX	4,474	7,172	6,204	2,709	1,576	2,705	411	149	117	34

Table 4A (continued). The reported **pounds** of pesticides used that are listed by U.S. EPA as B2 carcinogens or that are on the State's Proposition 65 list of chemicals "known to cause cancer."

Active Ingredient	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
PARA-DICHLOROBENZENE	3	2	4	3	219	86	4	11	1	25
PENTACHLOROPHENOL	40	3	3	8	33	92	466	14	17	3
POTASSIUM DICHROMATE	596	380	41	50	103	319	554	1	<1	11
PROPARGITE	1,742,736	1,770,065	1,743,278	1,816,028	1,385,327	1,504,268	1,331,979	1,159,792	972,371	1,054,607
PROPOXUR	2,667	3,296	1,341	1,760	1,604	1,735	2,141	611	449	304
PROPYLENE OXIDE	41,815	131,593	224,495	198,559	198,595	172,556	118,381	99,727	99,674	99,396
PROPYZAMIDE	111,797	113,761	106,811	99,292	104,292	104,484	103,705	108,987	107,531	104,375
SODIUM DICHROMATE	0	0	180,478	182,185	122,647	32,699	122	329	633	217
THIODICARB	0	13,679	122,927	156,002	114,785	60,453	36,844	9,360	5,194	8,392
VINCLOZOLIN	33,661	48,270	60,286	46,908	54,719	52,731	35,658	32,208	22,164	18,568
Grand Total	18,899,632	23,926,358	26,882,493	25,786,216	26,695,819	27,735,648	24,647,014	22,468,903	26,121,055	28,046,644

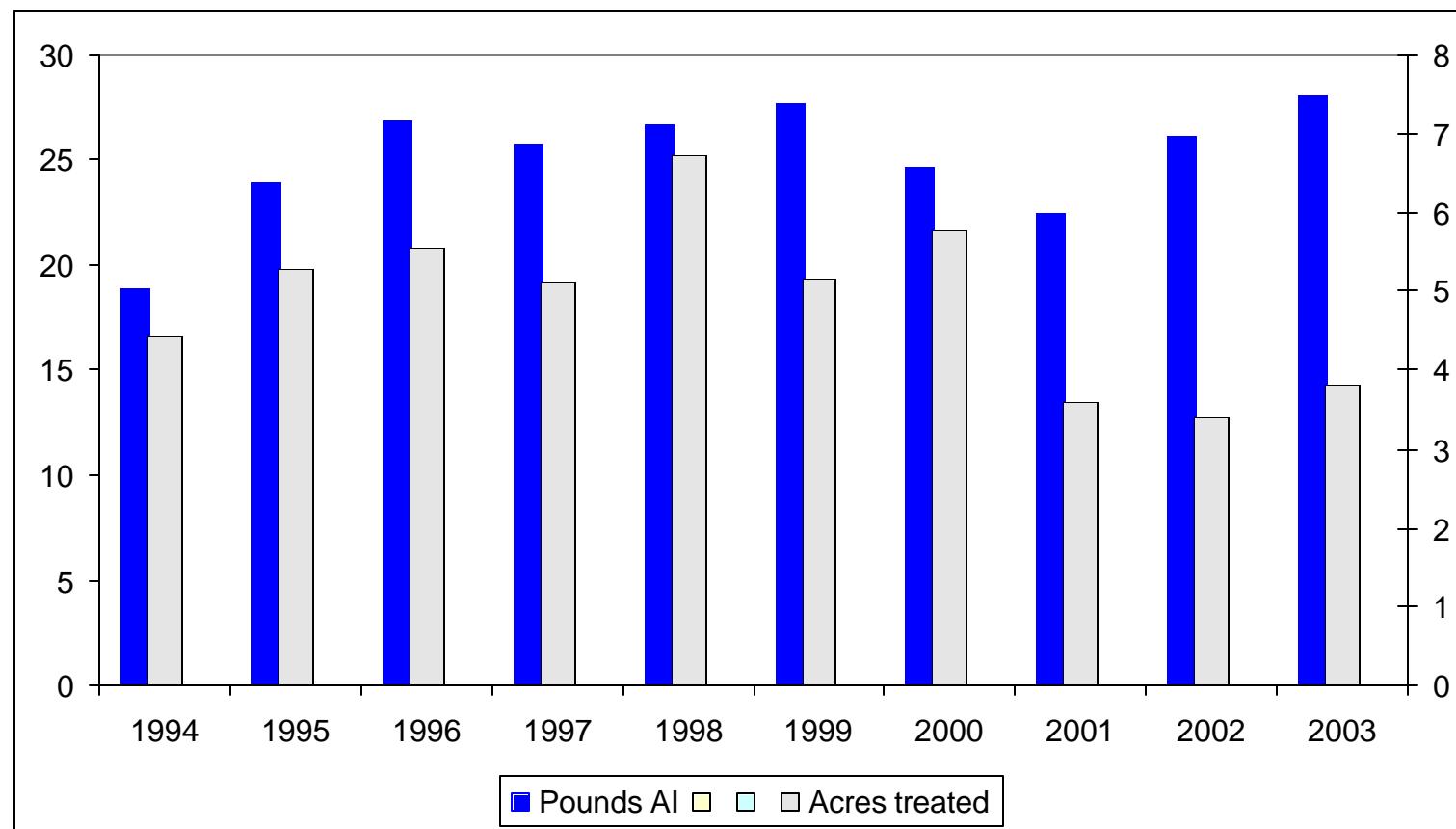
Table 4B. The reported **cumulative acres treated** with pesticides listed by U.S. EPA as B2 carcinogens or on the State's Proposition 65 list of chemicals “known to cause cancer.” Use includes primarily agricultural applications. The grand total for acres treated is less than the sum of acres treated for all active ingredients because some products contain more than one active ingredient. Data are from the Department of Pesticide Regulation's Pesticide Use.

Active Ingredient	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
1,3-DICHLOROPROPENE	33	4,174	17,223	22,193	27,059	29,430	33,101	30,817	42,064	48,944
ACIFLUORFEN, SODIUM SALT	2	8	<1	0	0	0	0	0	11	0
ALACHLOR	16,135	15,359	18,181	19,059	16,430	11,008	13,302	11,453	14,467	10,004
ARSENIC ACID	0	0	0	0	0	0	0	0	0	0
ARSENIC PENTOXIDE	660	0	0	0	0	0	709,893	56	0	0
ARSENIC TRIOXIDE	0	0	0	0	0	0	0	0	1	<1
CACODYLIC ACID	304,060	315,336	251,414	192,816	126,912	111,607	117,656	31,283	12,648	757
CAPTAN	244,164	295,860	381,989	347,631	602,684	404,731	309,768	215,969	213,438	271,140
CHLOROTHALONIL	517,357	674,126	674,086	492,219	796,672	456,007	428,109	312,726	347,725	361,250
CHROMIC ACID	660	0	0	0	0	0	709,893	56	0	0
CREOSOTE	0	0	0	0	126	11	45	1	0	0
DAMINOZIDE	2,692	2,659	2,653	3,512	4,510	3,107	3,416	6,146	5,319	3,103
DDVP	1,888	1,887	1,499	2,596	3,692	2,180	2,336	3,954	4,327	2,576
DIOCTYL PHTHALATE	1,060	0	55	14	6,250	24,270	11,195	10,776	6,649	3,880
DIPROPYL ISOCINCHOMERONATE	50	10	0	0	0	0	5	0	0	0
DIURON	454,829	507,279	685,352	819,993	865,246	849,482	864,334	788,559	796,903	843,154
ETHOPROP	5,767	5,470	3,139	3,213	3,784	3,610	3,477	3,542	4,152	6,078
ETHYLENE OXIDE	0	0	0	0	194	31	41	0	0	0
FENOXYCARB	5	11	5	<1	210	3,707	3,388	3,241	1,242	811
FOLPET	<1	0	1	2	0	0	0	0	0	0
FORMALDEHYDE	15	137	234	12	126	123	47	53	33	18
IPRODIONE	656,402	886,077	804,311	666,336	1,348,367	933,982	1,194,377	501,033	364,770	445,383
LINDANE	22,984	19,380	25,352	36,573	32,650	20,930	14,628	13,832	8,010	8,828
MANCOZEB	273,836	405,494	351,801	284,134	682,979	387,300	363,260	228,275	197,055	276,096
MANEB	512,009	652,122	731,079	624,123	942,083	629,897	611,717	535,105	554,787	659,893
METAM-SODIUM	183,625	199,457	215,899	198,395	154,309	186,300	146,847	125,263	141,357	142,396
METIRAM	0	0	0	0	<1	0	0	7	0	<1
ORTHO-PHENYLPHENOL	4	8	67	75	645	583	321	59	82	726
ORTHO-PHENYLPHENOL, SODIUM SALT	88	47	652	0	20	6,234	18,599	60	40	9
OXADIAZON	1,812	2,400	2,213	1,832	1,933	3,407	2,656	2,637	1,838	1,904
OXYTHIOQUINOX	6,410	10,000	8,768	5,896	5,306	2,152	817	250	182	71

Table 4B (continued). The reported **cumulative acres treated** with pesticides listed by U.S. EPA as B2 carcinogens or on the State's Proposition 65 list of chemicals "known to cause cancer".

Active Ingredient	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
PARA-DICHLOROBENZENE	0	0	0	0	10	0	0	0	0	0
PENTACHLOROPHENOL	2	<1	15	4	190	0	59	38	0	0
POTASSIUM DICHROMATE	0	0	0	0	40	71	40	0	20	0
PROPARGLITE	1,030,485	1,052,358	980,963	989,265	756,098	795,410	704,529	606,737	524,421	558,006
PROPOXUR	14	5	9	73	45	39	26	4	23	1
PROPYLENE OXIDE	0	0	0	<1	0	573	0	0	<1	0
PROPYZAMIDE	157,829	155,773	150,791	140,791	144,864	142,194	137,337	145,325	140,680	132,819
SODIUM DICHROMATE	0	0	0	0	0	0	0	0	0	0
THIODICARB	0	22,785	176,788	223,154	155,440	83,796	50,604	13,382	8,256	12,113
VINCLOZOLIN	49,519	66,672	82,968	67,373	69,067	63,931	43,629	38,570	27,786	21,682
Grand Total	4,424,181	5,278,330	5,545,337	5,108,872	6,725,624	5,142,621	5,776,617	3,616,556	3,410,894	3,802,876

Figure 2. Use trends of pesticides that are listed by U.S. EPA as B2 carcinogens or that are on the State's Proposition 65 list of chemicals "known to cause cancer." Reported pounds of active ingredient (AI) applied includes both agricultural and reportable nonagricultural applications. The reported cumulative acres treated includes primarily agricultural applications. Data are from the Department of Pesticide Regulation's Pesticide Use Reports.



USE TRENDS OF CHOLINESTERASE INHIBITING PESTICIDES

Table 5A. The reported **pounds** of cholinesterase-inhibiting pesticides used. These pesticides are the currently registered organophosphate and carbamate active ingredients. Use includes both agricultural and reportable nonagricultural applications. Data are from the Department of Pesticide Regulation's Pesticide Use Reports.

Active Ingredient	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
3-IODO-2-PROPYNYL BUTYLCARBAMATE	0	0	<1	0	1	<1	<1	<1	0	0
ACEPHATE	371,862	458,012	355,350	343,840	384,091	307,272	283,355	240,191	217,383	223,749
ALDICARB	225,973	354,500	545,117	530,066	534,665	280,755	329,431	297,882	244,786	262,103
AZINPHOS-METHYL	418,935	406,230	406,099	336,353	193,069	216,624	185,055	159,786	153,200	213,863
BENDIOCARB	4,431	1,526	1,674	259	125	108	593	62	32	23
BENSULIDE	64,796	69,271	94,587	129,784	192,136	242,460	217,150	189,216	194,687	229,016
BUTYLATE	108,686	67,179	87,612	84,268	69,805	71,071	31,732	27,640	19,412	26,826
CARBARYL	820,787	835,811	809,794	753,801	426,893	387,145	365,174	287,802	256,057	205,080
CARBOFURAN	278,108	242,999	220,622	183,321	161,588	138,665	132,427	95,863	81,486	49,275
CHLORPROPHAM	3,000	3,230	3,015	2,057	2,321	3,102	3,544	3,504	1,380	6,191
CHLORPYRIFOS	2,887,838	3,385,416	2,687,809	3,152,564	2,355,626	2,257,936	2,093,400	1,674,120	1,419,332	1,546,481
COUMAPHOS	0	0	0	0	0	15	152	97	62	64
CYCLOATE	51,035	49,138	44,628	55,459	62,753	49,096	37,408	31,785	34,347	30,080
DDVP	4,798	6,063	13,097	13,636	13,998	12,325	12,718	12,837	8,524	3,437
DEMETON	1,238	775	411	0	3	5	2	3	42	<1
DESMEDIPHAM	8,588	8,465	6,092	6,188	4,737	6,014	6,703	3,750	3,398	3,636
DIAZINON	1,358,358	1,216,935	1,093,121	955,108	900,596	979,458	1,057,845	1,001,294	690,590	523,786
DICROTOPHOS	1	113	3	0	11	122	0	2	27	41
DIMETHOATE	671,948	583,498	419,807	515,798	397,847	485,274	397,223	284,751	310,422	294,928
DISULFOTON	134,600	95,972	142,372	128,335	105,327	95,919	76,164	51,545	54,567	46,996
EPTC	765,576	660,185	703,996	579,245	393,031	448,883	323,254	276,782	253,887	141,756
ETHEPHON	848,134	982,776	951,415	882,802	762,217	734,263	734,810	620,075	538,449	574,371
ETHION	4,054	79	2	3	906	64	0	5	13	13
ETHOPROP	51,270	51,104	27,955	23,842	27,949	26,196	16,119	19,046	16,531	28,419
FENAMIPHOS	178,781	187,242	189,379	156,280	125,459	107,745	104,505	74,858	70,939	59,421
FENTHION	186	413	141	176	29	22	33	61	79	3
FONOFOS	73,167	74,936	67,969	50,555	25,349	24,216	4,370	580	465	182
FORMETANATE HYDROCHLORIDE	152,622	104,012	106,168	97,907	77,723	65,030	43,941	45,625	35,844	28,420
MALATHION	749,317	801,496	673,379	773,782	645,889	678,105	505,970	556,371	636,384	654,151
METHAMIDOPHOS	240,959	500,055	260,255	312,067	244,269	116,256	76,865	46,615	30,645	36,987
METHIDATHION	367,447	321,605	328,328	309,154	178,451	177,105	98,129	93,521	68,389	54,398
METHIOCARB	4,126	2,672	2,120	4,769	5,384	3,314	2,411	2,262	1,852	2,274

Table 5A (continued). The reported **pounds** of cholinesterase inhibiting pesticides used.

Active Ingredient	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
METHOMYL	707,814	807,977	679,383	833,758	666,442	551,181	550,862	378,305	294,491	364,779
METHYL PARATHION	129,155	140,469	130,614	153,187	158,228	157,594	75,169	59,620	53,644	73,337
MOLINATE	1,496,227	1,377,257	1,356,258	1,170,699	1,006,025	911,376	1,025,786	733,534	877,572	539,871
NALED	457,723	700,676	351,267	615,314	260,048	297,895	255,419	261,882	196,777	186,260
OXAMYL	73,440	66,179	82,327	119,441	161,042	128,956	137,989	77,121	80,315	93,754
OXYDEMETON-METHYL	111,347	120,101	106,612	115,781	89,789	122,912	110,797	99,756	96,357	93,789
PARATHION	6,104	13,642	14,050	5,187	5,766	4,041	3,581	2,589	3,205	621
PEBULATE	235,690	244,181	202,634	184,015	185,696	225,077	160,018	45,619	71,721	35,755
PHENMEDIPHAM	8,863	8,771	6,612	6,621	5,836	6,735	7,478	4,249	4,351	5,021
PHORATE	159,146	135,887	160,854	139,725	149,707	93,488	87,974	70,645	76,482	64,947
PHOSALONE	99	52	27	33	11	0	4	0	0	0
PHOSMET	189,415	266,349	395,160	566,484	644,898	638,822	583,116	484,059	404,934	341,642
POTASSIUM DIMETHYL DITHIO CARBAMATE	47	0	0	15	24,795	0	0	0	23	28
PROFENOFOS	263,884	245,420	184,264	150,575	40,433	49,575	43,879	22,011	24,452	12,871
PROPAMOCARB HYDROCHLORIDE	0	0	16,341	10,215	57,121	6,285	4,959	2,288	828	83
PROPETAMPHOS	38,307	77,985	23,249	17,338	9,970	6,074	4,500	3,991	2,463	721
PROPOXUR	2,667	3,296	1,341	1,760	1,604	1,735	2,141	611	449	304
S,S,S-TRIBUTYL PHOSPHOROTHIOATE	892,441	866,726	760,809	626,684	440,382	345,842	396,827	257,062	190,149	233,640
SODIUM DIMETHYL DITHIO CARBAMATE	337	1	0	0	8,279	355	1,315	173	0	0
SULFOTEP	1,000	509	316	355	213	246	215	267	77	8
SULPROFOS	876	171	0	119	84	0	0	<1	0	0
TETRACHLORVINPHOS	10,051	7,118	7,056	6,044	5,831	3,975	4,850	4,746	3,285	1,262
THIOBENCARB	406,085	559,610	618,412	894,287	724,926	732,505	1,007,249	644,625	839,962	587,211
THIODICARB	0	13,679	122,927	156,002	114,785	60,453	36,844	9,360	5,194	8,392
TRICHLORFON	4,275	4,552	3,327	3,843	2,476	2,779	3,992	3,004	1,545	1,068
Grand Total	16,045,617	17,132,318	15,466,155	16,158,902	13,056,633	12,262,468	11,645,448	9,263,448	8,571,483	7,891,332

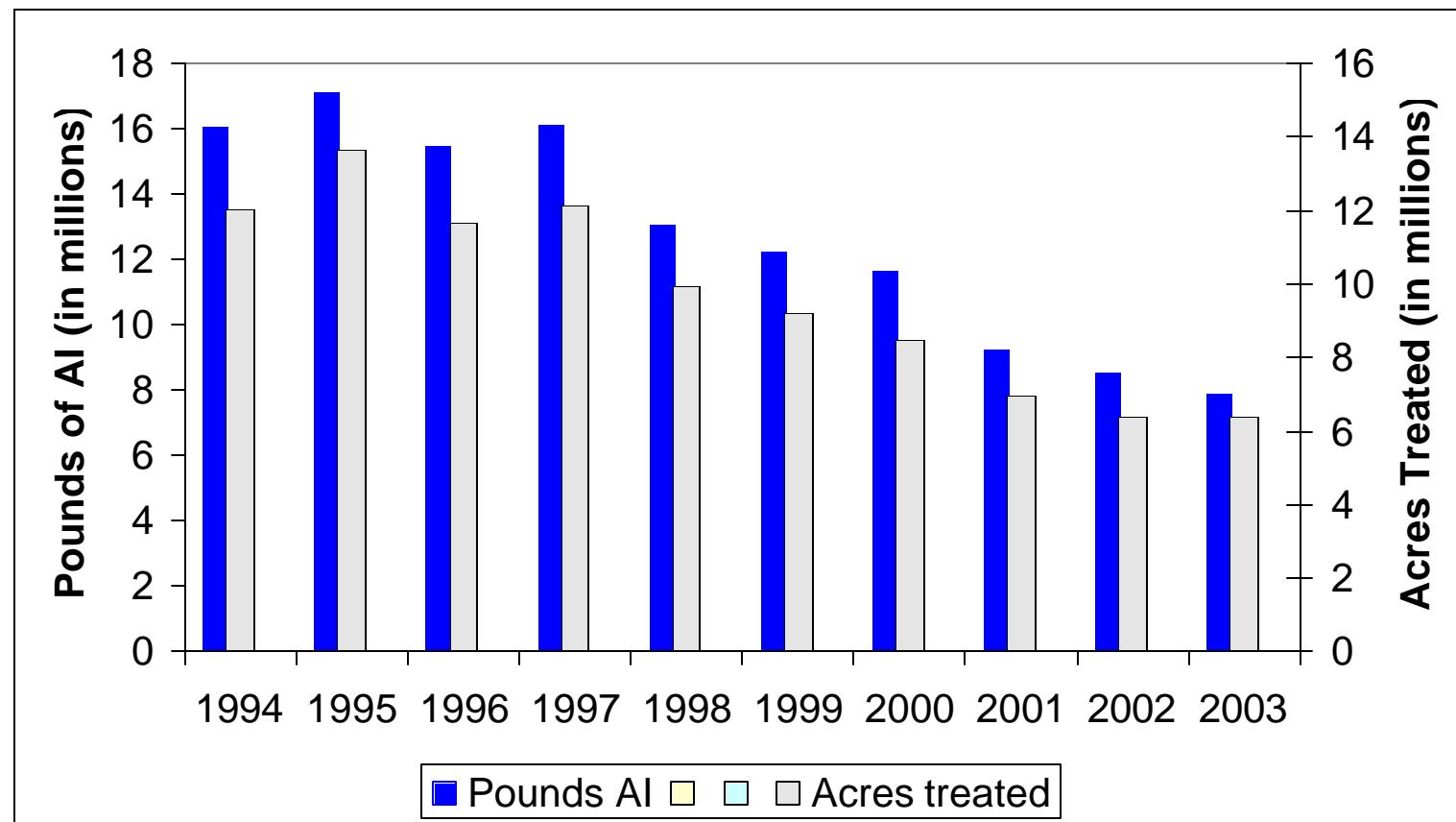
Table 5B. The reported **cumulative acres treated** with cholinesterase-inhibiting pesticides. These pesticides are the currently registered organophosphate and carbamate active ingredients. Use includes primarily agricultural applications. The grand total for acres treated is less than the sum of acres treated for all active ingredients because some products contain more than one active ingredient. Data are from the Department of Pesticide Regulation's Pesticide Use Reports.

Active Ingredient	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
3-IODO-2-PROPYNYL BUTYLCARBAMATE	0	0	0	0	150	0	0	40	0	0
ACEPHATE	402,643	489,259	406,607	372,566	403,537	370,111	295,298	266,278	232,908	223,396
ALDICARB	256,428	355,717	490,499	442,029	397,890	266,773	314,440	282,453	225,820	231,090
AZINPHOS-METHYL	293,466	274,347	277,745	233,406	134,334	140,226	118,805	117,544	94,035	117,001
BENDIOCARB	1,574	499	188	19	28	11	<1	2	0	9
BENSULIDE	17,446	22,489	31,916	45,795	61,984	80,873	72,866	62,859	60,883	66,375
BUTYLATE	23,105	14,864	17,689	17,572	14,259	14,959	6,957	6,270	4,598	5,450
CARBARYL	291,147	305,452	312,058	292,721	197,664	216,991	196,264	147,612	106,590	97,811
CARBOFURAN	460,647	449,507	364,150	322,064	303,957	272,441	258,441	246,149	182,567	91,791
CHLORPROPHAM	20	0	4	26	106	151	127	112	80	124
CHLORPYRIFOS	1,910,520	2,824,142	1,869,874	2,223,551	1,669,859	1,420,414	1,441,819	1,355,172	1,235,180	1,478,761
COUMAPHOS	0	0	0	0	0	0	1,339	809	733	17
CYCLOCATE	22,571	20,685	19,597	25,986	29,761	24,555	18,487	15,918	17,213	16,721
DDVP	1,888	1,887	1,499	2,596	3,692	2,180	2,336	3,954	4,327	2,576
DEMETON	2,490	1,583	1,002	0	18	66	0	56	0	2
DESMEDIPHAM	62,171	71,577	51,183	61,368	56,272	71,977	60,248	34,738	32,344	35,435
DIAZINON	878,221	752,898	680,947	530,355	477,804	546,577	478,994	437,934	489,149	483,283
DICROTOPHOS	0	76	9	0	16	11	0	0	0	64
DIMETHOATE	1,205,884	1,193,214	955,445	1,097,751	871,305	1,078,024	874,730	639,271	681,318	621,038
DISULFOTON	114,949	87,291	147,078	124,319	100,935	86,332	69,018	45,258	48,723	39,182
EPTC	273,441	241,587	232,820	208,093	141,511	148,685	107,613	99,953	94,240	56,639
ETHEPHON	704,394	806,425	776,247	700,941	653,817	720,773	697,300	631,330	550,255	601,519
ETHION	2,093	91	5	2	621	53	0	5	0	1
ETHOPROP	5,767	5,470	3,139	3,213	3,784	3,610	3,477	3,542	4,152	6,078
FENAMIPHOS	114,333	112,249	111,729	97,013	72,102	66,100	60,340	36,999	38,397	36,293
FENTHION	0	0	0	0	0	0	0	0	0	0
FONOFOSS	58,852	59,041	55,207	36,123	16,926	14,146	2,325	497	234	116
FORMETANATE HYDROCHLORIDE	141,203	100,837	103,521	95,544	77,965	63,047	42,880	45,234	36,131	29,411
MALATHION	401,037	425,062	363,635	410,658	383,121	403,646	323,737	290,933	314,361	287,445
METHAMIDOPHOS	199,314	418,703	313,618	263,816	290,061	158,079	101,494	63,046	37,012	41,506
METHIDATHION	255,006	231,930	245,914	200,528	129,358	115,249	71,992	64,785	48,554	38,516
METHiocarb	3,394	2,129	1,511	2,906	3,523	2,369	2,700	1,866	1,997	1,757

Table 5B (continued). The reported cumulative acres treated with cholinesterase-inhibiting pesticides.

Active Ingredient	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
METHOMYL	1,215,586	1,425,295	1,145,115	1,376,868	1,118,188	880,910	893,424	627,264	509,104	615,609
METHYL PARATHION	137,691	129,976	125,729	125,638	128,675	119,315	43,773	39,449	37,448	51,192
MOLINATE	384,031	348,465	357,239	317,680	267,090	246,084	276,315	190,488	222,044	134,120
NALED	473,011	702,155	338,861	604,615	251,044	279,898	244,617	234,184	154,963	148,781
OXAMYL	115,085	106,205	122,353	176,793	225,380	177,183	179,048	100,294	98,313	115,250
OXYDEMETON-METHYL	226,433	253,868	220,824	244,056	186,964	253,281	225,984	200,171	193,441	189,047
PARATHION	3,404	6,688	5,099	2,071	2,592	1,976	4,025	2,977	7,026	1,016
PEBULATE	76,688	86,494	74,647	69,381	64,501	74,697	51,205	15,122	21,491	10,680
PHENMEDIPHAM	62,694	72,060	52,125	62,449	58,649	73,905	61,975	35,477	34,452	38,265
PHORATE	133,392	111,217	123,789	106,427	109,759	81,724	71,407	63,160	58,391	50,290
PHOSALONE	47	56	18	64	5	0	10	0	0	0
PHOSMET	136,500	172,539	214,416	236,611	312,707	253,234	219,707	189,517	158,970	128,029
POTASSIUM DIMETHYL DITHIO CARBAMATE	6	0	0	0	0	0	0	0	2	6
PROFENOFOS	336,830	296,860	211,769	162,204	44,641	46,250	46,617	23,700	25,997	13,599
PROPAMOCARB HYDROCHLORIDE	0	0	23,793	14,677	81,050	6,851	17,696	2,625	1,041	22
PROPETAMPHOS	0	0	0	0	0	0	0	0	0	0
PROPOXUR	14	5	9	73	45	39	26	4	23	1
S,S,S-TRIBUTYL PHOSPHOROTRITHIOATE	615,978	604,586	531,052	437,505	305,306	245,470	282,844	187,153	129,570	158,604
SODIUM DIMETHYL DITHIO CARBAMATE	0	0	0	0	253	20	0	60	0	0
SULFOTEP	884	537	408	251	241	224	168	314	57	3
SULPROFOS	896	299	0	83	80	0	0	0	0	0
TETRAChLORVINPHOS	780	519	674	356	3,109	1,543	575	232	125	6
THIOBENCARB	91,906	126,745	159,121	227,658	187,295	186,341	252,506	169,056	222,606	154,952
THIODICARB	0	22,785	176,788	223,154	155,440	83,796	50,604	13,382	8,256	12,113
TRICHLORFON	818	1,037	204	149	1,071	97	70	51	19	8
Grand Total	12,051,166	13,664,563	11,666,708	12,137,558	9,940,972	9,227,717	8,484,527	6,960,130	6,392,624	6,395,557

Figure 3. Use trends of cholinesterase-inhibiting pesticides, which includes pesticides with organophosphate and carbamate active ingredients. Reported pounds of active ingredient (AI) applied includes both agricultural and reportable nonagricultural applications. The reported cumulative acres treated includes primarily agricultural applications. Data are from the Department of Pesticide Regulation's Pesticide Use Reports.



USE TRENDS OF PESTICIDES ON DPR'S GROUND WATER PROTECTION LIST

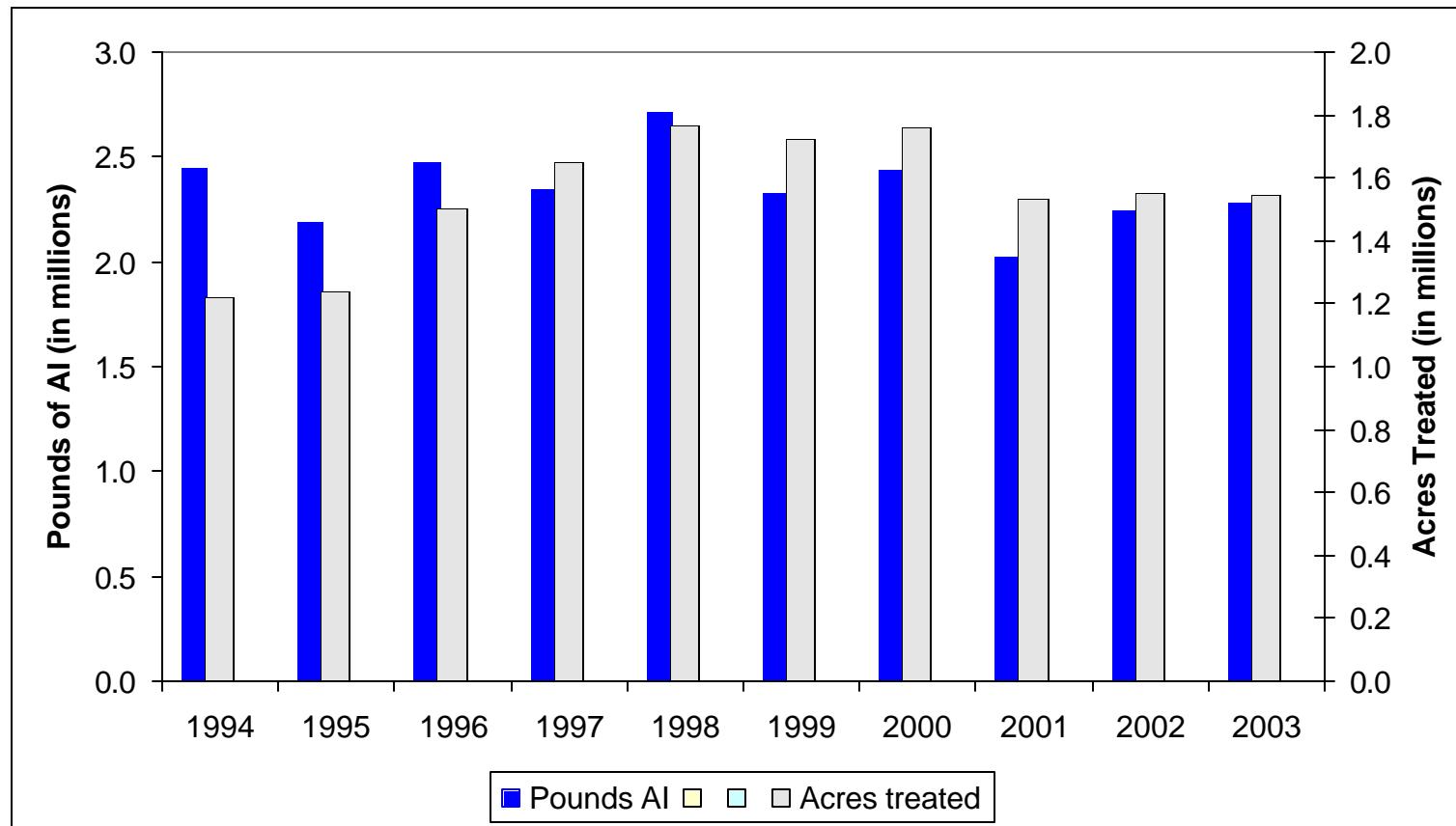
Table 6A. The reported **pounds** of pesticides on DPR's ground water protection list. These pesticides are the currently registered active ingredients listed in section 6800(a) of the California Code of Regulations, Title 3, Division 6, Chapter 4, Subchapter 1, Article 1. Use includes both agricultural and reportable nonagricultural applications. Data are from the Department of Pesticide Regulation's Pesticide Use Reports.

Active Ingredient	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
ATRAZINE	46,497	36,078	57,018	46,568	54,840	69,549	57,403	62,872	59,292	58,245
ATRAZINE, OTHER RELATED	2,480	1,932	3,062	2,502	2,943	3,706	1,224	1,321	1,237	1,216
BENTAZON, SODIUM SALT	1,175	655	1,518	1,907	1,757	1,837	1,210	393	1,045	1,216
BROMACIL	104,052	95,444	98,293	82,424	84,645	75,613	67,753	56,128	55,821	56,417
BROMACIL, LITHIUM SALT	11,085	6,517	17,381	9,141	4,686	4,162	4,478	3,217	4,016	3,025
DIURON	1,234,507	1,054,409	1,265,426	1,228,114	1,504,268	1,188,640	1,343,727	1,107,421	1,303,108	1,343,596
NORFLURAZON	154,383	153,138	196,142	212,621	265,886	286,214	257,651	209,981	188,032	146,815
PROMETON	84	117	68	20	22	4	28	2	21	2
SIMAZINE	890,353	837,366	839,209	764,586	794,758	696,574	700,648	587,000	634,176	674,141
Grand Total	2,444,616	2,185,656	2,478,115	2,347,882	2,713,804	2,326,298	2,434,122	2,028,334	2,246,747	2,284,673

Table 6B. The reported **cumulative acres treated** in California with pesticides on DPR's ground water protection list. These pesticides are the currently registered active ingredients listed in section 6800(a) of the California Code of Regulations, Title 3, Division 6, Chapter 4, Subchapter 1, Article 1. Use includes primarily agricultural applications. The grand total for acres treated is less than the sum of acres treated for all active ingredients because some products contain more than one active ingredient. Data are from the Department of Pesticide Regulation's Pesticide Use Reports.

Active Ingredient	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
ATRAZINE	32,065	22,234	32,043	27,257	37,556	39,881	34,524	33,376	28,589	29,966
ATRAZINE, OTHER RELATED	32,065	22,234	32,042	27,257	37,529	39,876	34,524	33,376	28,589	29,966
BENTAZON, SODIUM SALT	1,688	805	1,460	2,010	1,904	1,968	1,502	432	1,094	987
BROMACIL	65,421	66,289	62,206	58,722	57,136	53,861	42,458	30,149	29,585	27,974
BROMACIL, LITHIUM SALT	0	0	0	0	40	40	30	0	0	0
DIURON	454,829	507,279	685,352	819,993	865,246	849,482	864,334	788,559	796,903	843,154
NORFLURAZON	139,498	133,585	179,015	186,991	214,144	217,178	230,836	192,305	161,702	125,619
PROMETON	8	23	27	8	85	18	51	0	174	49
SIMAZINE	589,560	573,735	607,228	613,237	647,072	611,626	619,639	515,419	561,195	546,015
Grand Total	1,218,778	1,238,484	1,505,936	1,651,236	1,769,479	1,721,896	1,757,983	1,532,564	1,551,972	1,547,283

Figure 4. Use trends of pesticides on DPR's ground water protection list. These pesticides are the currently registered active ingredients listed in section 6800(a) of the California Code of Regulations, Title 3, Division 6, Chapter 4, Subchapter 1, Article 1. Reported pounds of active ingredient (AI) applied includes both agricultural and reportable nonagricultural applications. The reported cumulative acres treated includes primarily agricultural applications. Data are from the Department of Pesticide Regulation's Pesticide Use Reports.



USE TRENDS OF PESTICIDES ON DPR'S TOXIC AIR CONTAMINANTS LIST

Table 7A. The reported **pounds** of pesticides on DPR's toxic air contaminants list applied in California. These pesticides are the currently registered active ingredients listed in the California Code of Regulations, Title 3, Division 6, Chapter 4, Subchapter 1, Article 1, section 6860. Use includes both agricultural and reportable non-agricultural applications. Data are from the Department of Pesticide Regulation's Pesticide Use Reports.

Active Ingredient	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
1,3-DICHLOROPROPENE	2,122	409,821	1,956,846	2,400,930	2,911,385	3,122,723	4,442,193	4,135,462	5,359,193	7,009,034
2,4-D	27,544	23,995	22,089	10,227	3,868	3,060	2,065	1,787	1,691	1,732
2,4-D, 2-ETHYLHEXYL ESTER	71	278	10	1,313	13,750	72,225	12,557	13,706	15,477	19,715
2,4-D, ALKANOLAMINE SALTS (ETHANOL AND ISOPROPANOL AMINES)	28,863	30,642	27,954	25,684	29,061	15,992	6,737	674	452	1,357
2,4-D, BUTOXYETHANOL ESTER	67,414	31,743	38,567	13,263	12,140	5,628	6,107	5,336	3,482	3,812
2,4-D, BUTOXYPROPYL ESTER	1,166	224	61	13	569	5	4	3	0	0
2,4-D, BUTYL ESTER	1	39	0	0	2,169	8	21	<1	593	2
2,4-D, DIETHANOLAMINE SALT	714	1,938	3,003	24,809	14,965	5,843	13,002	6,667	8,080	8,831
2,4-D, DIMETHYLAMINE SALT	399,046	454,658	468,771	428,874	422,673	355,318	426,211	399,644	425,542	512,828
2,4-D, DODECYLAMINE SALT	5	16	8	58	75	730	0	257	322	0
2,4-D, HEPTYLAMINE SALT	0	86	<1	0	0	46	0	0	<1	0
2,4-D, ISOOCTYL ESTER	1,212	13,466	7,822	60,356	46,603	17,387	6,914	15,828	12,343	12,366
2,4-D, ISOPROPYL ESTER	4,508	5,077	5,090	6,543	7,510	6,879	8,260	6,618	7,843	8,322
2,4-D, N-OLEYL-1,3-PROPYLENEDIAMINE SALT	672	37	35	0	3	7	11	0	0	0
2,4-D, OCTYL ESTER	0	15	0	0	0	0	0	0	0	0
2,4-D, PROPYL ESTER	2,326	2,032	1,774	1,575	999	1,822	783	391	634	326
2,4-D, TETRADECYLAMINE SALT	1	4	2	13	17	170	0	60	75	0
2,4-D, TRIETHYLAMINE SALT	121,241	105,656	93,876	34,610	5,688	2,344	1,038	634	426	435
2,4-D, TRIISOPROPYLAMINE SALT	24	6	2	3	5	6	0	5	9	6
ACROLEIN	336,993	362,773	322,578	341,245	264,207	328,238	290,180	233,928	283,541	272,733
ALUMINUM PHOSPHIDE	86,525	80,577	103,858	89,198	67,804	123,419	119,545	100,020	169,224	119,500
ARSENIC ACID	27,571	37,206	53,777	59,835	52,558	48,029	11,906	12,023	4,976	318
ARSENIC PENTOXIDE	86,445	83,814	205,089	64,372	50,899	245,238	91,267	259,386	194,650	165,709
ARSENIC TRIOXIDE	<1	<1	<1	<1	1	1	<1	<1	<1	<1
CAPTAN	608,658	734,314	918,588	799,878	1,559,136	965,922	642,757	399,263	392,205	499,973
CAPTAN, OTHER RELATED	14,890	17,831	21,729	19,448	54,940	22,216	14,617	9,017	8,945	11,344
CARBARYL	820,787	835,811	809,794	753,801	426,893	387,145	365,174	287,802	256,057	205,080
CHLORINE	750,653	2,815,119	330,017	423,469	422,252	628,546	678,417	297,086	502,944	619,735
CHROMIC ACID	120,822	117,092	286,521	89,931	71,109	343,543	128,642	363,205	272,300	232,064
DAZOMET	3,026	5,875	12,851	13,305	12,217	12,409	10,486	44,299	45,020	44,798
DDVP	4,798	6,063	13,097	13,636	13,998	12,325	12,718	12,837	8,524	3,437

Table 7A (continued). The reported **pounds** of pesticides on DPR's toxic air contaminants list applied in California.

Active Ingredient	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
ETHYLENE OXIDE	3	0	0	0	31	2	6	3	0	0
FORMALDEHYDE	11,864	153,519	334,548	403,824	305,297	111,714	55,300	28,612	14,035	18,690
HYDROGEN CHLORIDE	206	224	1,938	129	762	11,067	3,316	4,276	4,256	3,222
LINDANE	5,281	4,507	4,576	5,388	6,293	4,842	4,738	2,388	1,633	908
MAGNESIUM PHOSPHIDE	1,892	2,703	2,163	2,362	4,132	3,540	3,541	2,492	4,811	2,844
MANCOZEB	464,924	659,240	567,866	526,364	987,270	630,968	611,498	430,604	396,672	538,033
MANEB	912,903	1,257,122	1,328,318	1,081,124	1,596,876	1,045,567	1,203,483	817,059	851,643	1,026,685
META-CRESOL	2	2	3	6	8	11	14	1	1	1
METAM-SODIUM	11,122,361	14,975,528	15,253,924	14,969,732	13,729,306	16,774,246	13,218,764	12,545,403	15,137,719	14,815,687
METHANOL	100	27	0	0	0	3	<1	0	0	0
METHOXYCHLOR	692	1,049	484	358	566	16	26	41	144	3
METHOXYCHLOR, OTHER RELATED	90	139	62	44	11	<1	0	<1	0	0
METHYL BROMIDE	16,607,324	17,165,964	16,022,069	15,663,832	13,569,875	15,300,388	10,869,241	6,618,631	6,550,818	7,384,398
METHYL ISOTHIOCYANATE	2,219	123	0	353	220	616	3,323	2,871	3,512	547
METHYL PARATHION	129,155	140,469	130,614	153,187	158,228	157,594	75,169	59,620	53,644	73,337
NAPHTHALENE	1	<1	0	1	333	<1	0	0	<1	23
PARA-DICHLOROBENZENE	3	2	4	3	219	86	4	11	1	25
PARATHION	6,104	13,642	14,050	5,187	5,766	4,041	3,581	2,589	3,205	621
PCNB	91,601	109,755	83,087	89,548	88,036	67,424	62,224	50,341	43,387	38,821
PCP, OTHER RELATED	5	<1	<1	1	2	11	54	2	2	<1
PCP, SODIUM SALT	0	0	0	0	2	0	0	<1	0	0
PCP, SODIUM SALT, OTHER RELATED	0	0	0	0	0	0	0	0	0	0
PENTACHLOROPHENOL	40	3	3	8	33	92	466	14	17	3
PHENOL	296	300	25	8	44	12	20	30	0	<1
PHOSPHINE	0	0	0	0	0	0	0	44	901	1,141
PHOSPHORUS	29	34	58	14	12	9	22	3	1	1
POTASSIUM N-METHYLDITHIO CARBAMATE	0	0	0	0	9,143	0	105,364	137,098	449,804	581,840
POTASSIUM PERMANGANATE	0	0	0	0	243	0	0	0	0	0
PROPOXUR	2,667	3,296	1,341	1,760	1,604	1,735	2,141	611	449	304
PROPYLENE OXIDE	41,815	131,593	224,495	198,559	198,595	172,556	118,381	99,727	99,674	99,396
S,S,S-TRIBUTYL PHOSPHOROTRITHIOATE	892,441	866,726	760,809	626,684	440,382	345,842	396,827	257,062	190,149	233,640
SODIUM CYANIDE	1,754	1,347	1,338	2,197	3,280	1,098	2,178	2,437	2,542	2,808
SODIUM DICHLORATE	0	0	180,478	182,185	122,647	32,699	122	329	633	217
SODIUM TETRAETHIOTRICARBONATE	63,620	226,590	543,229	799,092	898,145	688,701	596,028	375,487	352,342	212,308
TRIFLURALIN	1,261,342	1,380,785	1,143,695	1,191,780	1,219,810	1,260,536	1,162,359	934,584	1,093,884	1,062,581
XYLENE	29,001	17,944	12,619	8,511	5,366	4,847	4,292	9,544	2,680	4,360
ZINC PHOSPHIDE	2,933	1,610	1,217	2,326	1,200	5,447	1,607	1,120	980	1,252
Grand Total	35,170,769	43,290,450	42,316,825	41,590,956	39,821,232	43,352,935	35,795,701	28,988,970	33,234,086	35,857,153

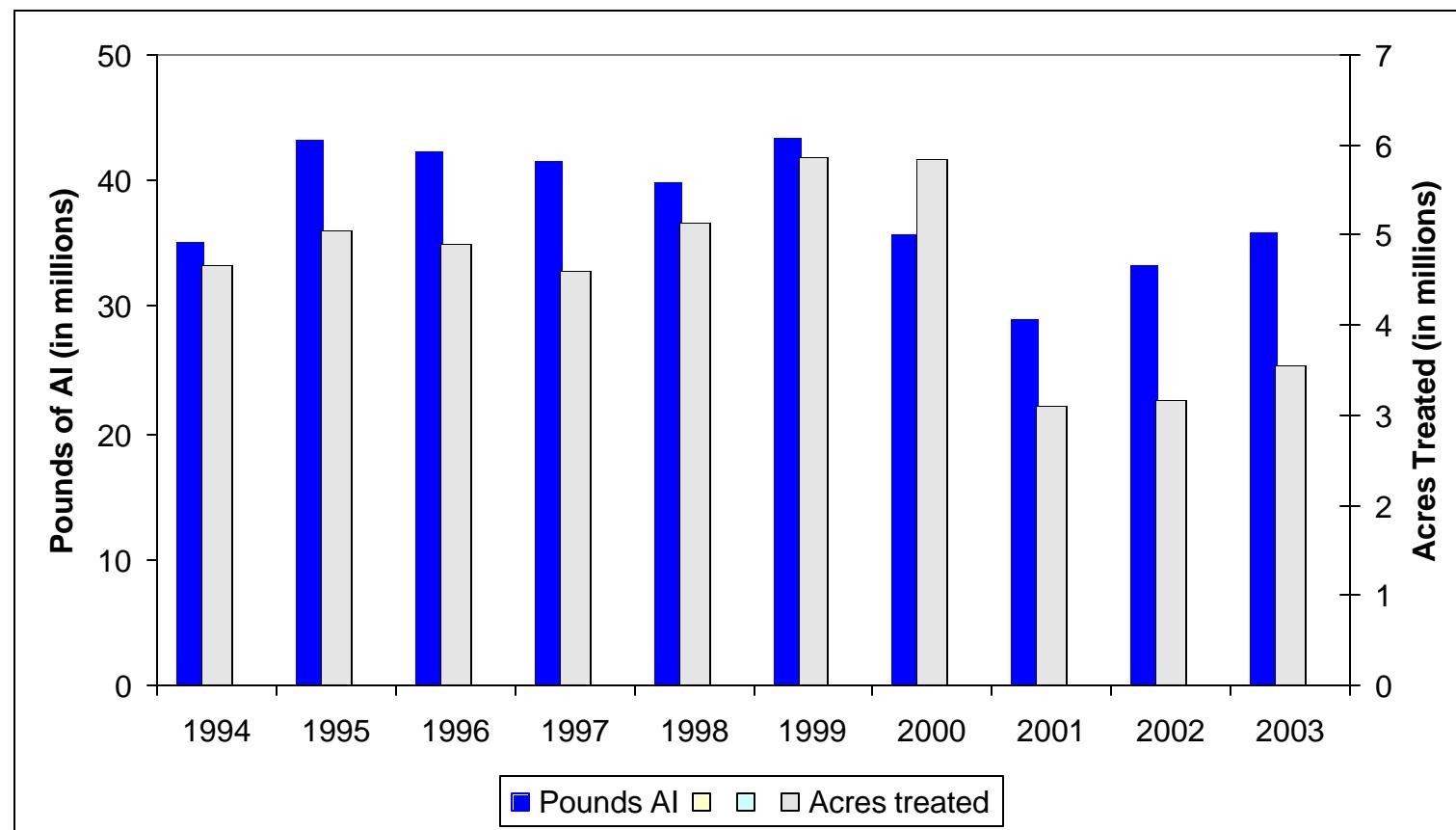
Table 7B. The reported **cumulative acres treated** in California with pesticides on DPR's toxic air contaminants list. These pesticides are the currently registered active ingredients listed in the California Code of Regulations, Title 3, Division 6, Chapter 4, Subchapter 1, Article 1, section 6860. Use includes primarily agricultural applications. The grand total for acres treated is less than the sum of acres treated for all active ingredients because some products contain more than one active ingredient. Data are from the Department of Pesticide Regulation's Pesticide Use Reports.

Active Ingredient	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
1,3-DICHLOROPROPENE	33	4,174	17,223	22,193	27,059	29,430	33,101	30,817	42,064	48,944
2,4-D	156,563	151,453	137,230	50,709	11,649	7,791	5,054	3,952	2,295	2,562
2,4-D, 2-ETHYLHEXYL ESTER	65	385	160	729	6,867	7,624	7,833	6,919	9,906	22,426
2,4-D, ALKANOLAMINE SALTS (ETHANOL AND ISOPROPANOL AMINES)	26,138	22,298	21,872	20,055	22,117	11,843	5,711	359	264	630
2,4-D, BUTOXYETHANOL ESTER	46,343	29,933	35,599	13,504	13,798	7,198	7,013	5,633	2,565	2,539
2,4-D, BUTOXYPROPYL ESTER	100	5	2	51	105	37	5	9	0	0
2,4-D, BUTYL ESTER	0	0	0	0	307	37	24	1	101	0
2,4-D, DIETHANOLAMINE SALT	933	4,683	8,721	88,149	58,239	23,884	49,357	27,705	36,290	39,046
2,4-D, DIMETHYLAMINE SALT	474,599	524,146	540,728	527,870	477,967	411,858	495,513	475,796	491,048	595,257
2,4-D, DODECYLAMINE SALT	0	0	0	76	82	1,481	0	262	276	0
2,4-D, HEPTYLAMINE SALT	0	18	<1	0	0	29	0	0	0	0
2,4-D, ISOCTYL ESTER	379	3,497	5,163	35,045	29,179	14,449	3,970	16,375	6,925	9,476
2,4-D, ISOPROPYL ESTER	63,244	72,878	69,081	87,492	101,141	100,837	103,938	88,849	108,908	116,859
2,4-D, N-OLEYL-1,3-PROPYLENEDIAMINE SALT	449	36	26	0	2	3	0	0	0	0
2,4-D, OCTYL ESTER	0	0	0	0	0	0	0	0	0	0
2,4-D, PROPYL ESTER	28,812	22,655	23,846	21,479	14,356	15,542	11,278	5,200	7,468	5,509
2,4-D, TETRADECYLAMINE SALT	0	0	0	76	82	1,481	0	262	276	0
2,4-D, TRIETHYLAMINE SALT	152,474	146,454	131,679	46,600	7,381	2,638	1,311	1,257	688	1,035
2,4-D, TRIISOPROPYLAMINE SALT	0	0	0	0	0	0	0	0	0	0
ACROLEIN	888	3,190	2,462	1,514	292	3,981	873	1,409	2,206	642
ALUMINUM PHOSPHIDE	120,397	92,977	80,217	66,017	74,441	1,034,732	1,271,629	67,422	70,176	73,864
ARSENIC ACID	0	0	0	0	0	0	0	0	0	0
ARSENIC PENTOXIDE	660	0	0	0	0	0	709,893	56	0	0
ARSENIC TRIOXIDE	0	0	0	0	0	0	0	0	1	<1
CAPTAN	244,164	295,860	381,989	347,631	602,684	404,731	309,768	215,969	213,438	271,140
CAPTAN, OTHER RELATED	244,097	295,831	381,989	347,235	602,585	404,511	309,116	215,958	213,388	270,968
CARBARYL	291,147	305,452	312,058	292,721	197,664	216,991	196,264	147,612	106,590	97,811
CHLORINE	0	290	0	1,005	1,329	46,611	37,220	95	150	650
CHROMIC ACID	660	0	0	0	0	0	709,893	56	0	0
DAZOMET	59	384	863	1,099	3,589	243	222	224	136	326
DDVP	1,888	1,887	1,499	2,596	3,692	2,180	2,336	3,954	4,327	2,576

Table 7B (continued). The reported **cumulative acres treated** in California with pesticides on the toxic air contaminants list.

Active Ingredient	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
ETHYLENE OXIDE	0	0	0	0	194	31	41	0	0	0
FORMALDEHYDE	15	137	234	12	126	123	47	53	33	18
HYDROGEN CHLORIDE	1	0	1	0	16	0	0	27	590	273
LINDANE	22,984	19,380	25,352	36,573	32,650	20,930	14,628	13,832	8,010	8,828
MAGNESIUM PHOSPHIDE	0	23	19	26	184	616,017	46	373	7	167
MANCOZEB	273,836	405,494	351,801	284,134	682,979	387,300	363,260	228,275	197,055	276,096
MANEB	512,009	652,122	731,079	624,123	942,083	629,897	611,717	535,105	554,787	659,893
META-CRESOL	930	1,279	1,309	3,488	1,407	657	3,142	517	267	244
METAM-SODIUM	183,625	199,457	215,899	198,395	154,309	186,300	146,847	125,263	141,357	142,396
METHANOL	0	0	0	0	0	0	14	0	0	0
METHOXYCHLOR	220	30	19	131	194	140	197	88	24	0
METHOXYCHLOR, OTHER RELATED	70	5	9	52	5	0	0	0	0	0
METHYL BROMIDE	106,694	107,933	96,507	103,068	90,107	102,125	75,741	60,892	53,100	55,251
METHYL ISOTHIOCYANATE	0	0	0	0	47	100	0	0	0	0
METHYL PARATHION	137,691	129,976	125,729	125,638	128,675	119,315	43,773	39,449	37,448	51,192
NAPHTHALENE	0	0	0	0	0	0	0	0	20	0
PARA-DICHLOROBENZENE	0	0	0	0	10	0	0	0	0	0
PARATHION	3,404	6,688	5,099	2,071	2,592	1,976	4,025	2,977	7,026	1,016
PCNB	55,371	53,079	44,187	29,169	39,090	28,324	28,628	25,832	9,533	7,759
PCP, OTHER RELATED	2	<1	15	4	15	0	59	38	0	0
PCP, SODIUM SALT	0	0	0	0	20	0	0	0	0	0
PCP, SODIUM SALT, OTHER RELATED	0	0	0	0	0	0	0	0	0	0
PENTACHLOROPHENOL	2	<1	15	4	190	0	59	38	0	0
PHENOL	6,126	7,947	718	37	275	459	5	501	0	25
PHOSPHINE	0	0	0	0	0	0	0	0	0	0
PHOSPHORUS	3,435	1,908	69	790	965	5,701	2,847	252	0	0
POTASSIUM N-METHYLDITHIO CARBAMATE	0	0	0	21	50	0	534	2,321	9,073	12,887
POTASSIUM PERMANGANATE	0	0	0	0	20	0	0	0	0	0
PROPOXUR	14	5	9	73	45	39	26	4	23	1
PROPYLENE OXIDE	0	0	0	<1	0	573	0	0	<1	0
S,S,S-TRIBUTYL PHOSPHOROTHITHIOATE	615,978	604,586	531,052	437,505	305,306	245,470	282,844	187,153	129,570	158,604
SODIUM CYANIDE	82,520	6,040	3,020	84,800	53,285	0	0	0	0	0
SODIUM DICHROMATE	0	0	0	0	0	0	0	0	0	0
SODIUM TETRATHIOLCARBONATE	3,706	12,997	27,736	35,473	34,488	24,947	21,002	13,574	11,559	6,832
TRIFLURALIN	1,160,072	1,282,997	1,086,892	1,131,033	1,083,219	1,159,648	1,038,856	800,893	944,334	903,654
XYLENE	28,673	28,870	24,221	13,568	11,327	3,325	6,208	9,665	4,533	7,512
ZINC PHOSPHIDE	27,654	16,101	22,801	26,756	18,833	38,101	16,349	11,069	7,049	8,387
Grand Total	4,656,488	5,042,019	4,892,104	4,591,003	5,142,630	5,870,168	5,842,438	3,111,086	3,173,973	3,540,993

Figure 5. Use trends of pesticides on DPR's toxic air contaminants list. These pesticides are the currently registered active ingredients listed in the California Code of Regulations, Title 3, Division 6, Chapter 4, Subchapter 1, Article 1, section 6860. Reported pounds of active ingredient (AI) applied includes both agricultural and reportable nonagricultural applications. The reported cumulative acres treated includes primarily agricultural applications. Data are from the Department of Pesticide Regulation's Pesticide Use Reports.



USE TRENDS OF OIL PESTICIDES

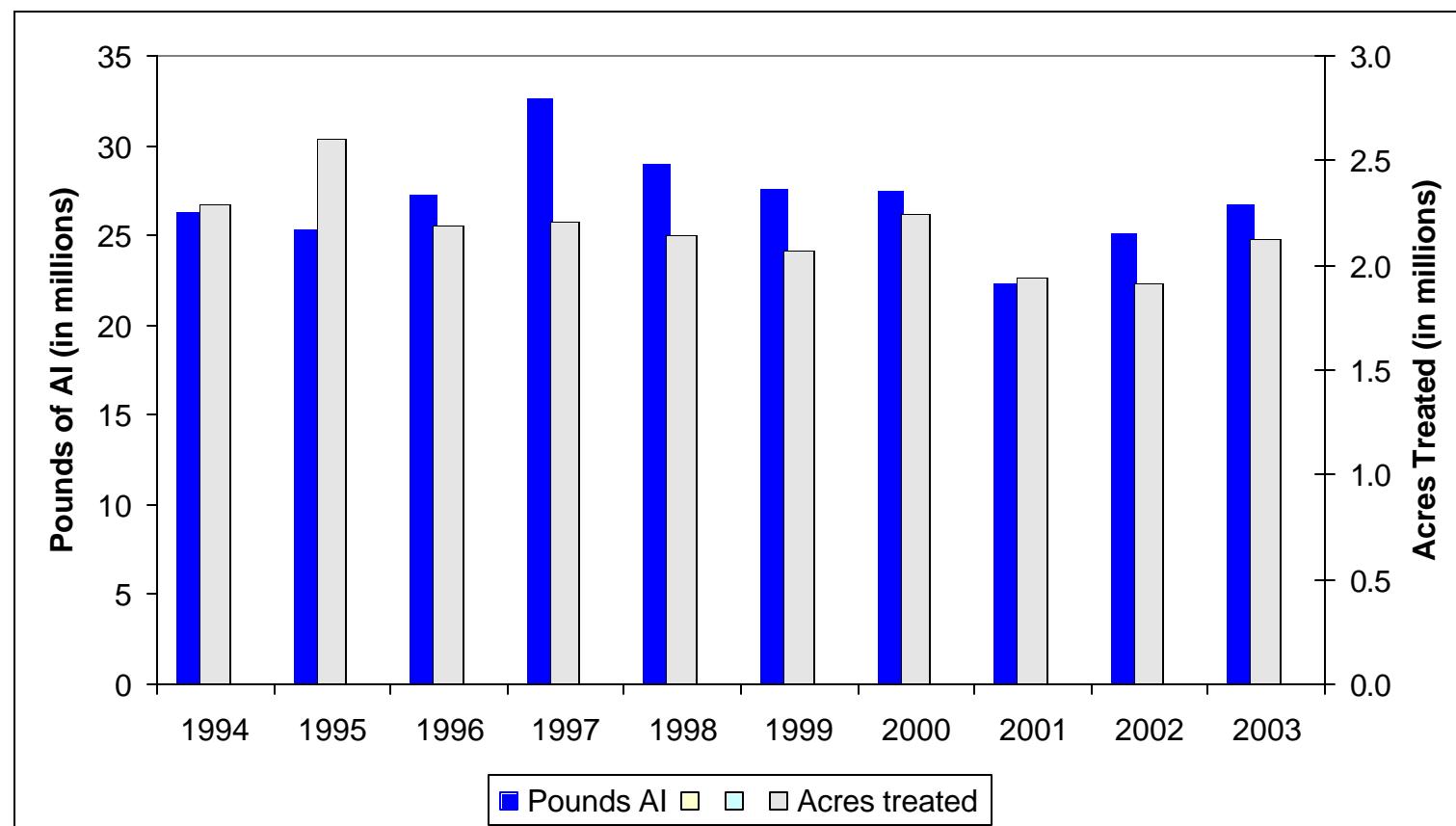
Table 8A. The reported **pounds** of oil pesticides. As a broad group, oil pesticides and other petroleum distillates are on U.S. EPA's list of B2 carcinogens or the State's Proposition 65 list of chemicals "known to cause cancer." However, these classifications do not distinguish among oil pesticides that may not qualify as carcinogenic due to their degree of refinement. Many such oil pesticides also serve as alternatives to high-toxicity chemicals. For this reason, oil pesticide data was classified separately in this report. Use includes both agricultural and reportable nonagricultural applications. Data are from the Department of Pesticide Regulation's Pesticide Use Reports.

Active Ingredient	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
COAL TAR HYDROCARBONS	0	0	0	0	0	0	0	50	<1	0
HYDROTREATED PARAFFINIC SOLVENT	0	0	0	0	0	0	0	0	0	284,236
ISOPARAFFINIC HYDROCARBONS	8	10	5	2	35	8	13	1	1,928	23,782
KEROSENE	152,200	145,743	120,700	101,293	90,108	70,398	84,562	48,304	18,404	12,407
MINERAL OIL	3,444,484	3,350,535	4,797,876	5,542,530	5,286,094	4,418,280	3,911,471	3,654,856	5,054,070	6,280,443
NAPHTHA, HEAVY AROMATIC	27	26	143	83	0	0	0	29	0	2
PETROLEUM DERIVATIVE RESIN	551	4	94	15	6	1	3	1	<1	1
PETROLEUM DISTILLATES	2,279,717	2,459,518	1,705,072	1,791,012	1,604,775	2,416,054	2,299,176	1,739,436	1,565,116	1,879,545
PETROLEUM DISTILLATES, ALIPHATIC	0	0	0	0	0	0	<1	7	49,237	15,163
PETROLEUM DISTILLATES, AROMATIC	64,526	31,535	14,630	13,961	35,085	9,925	10,400	2,851	6,202	2,916
PETROLEUM DISTILLATES, REFINED	63,524	45,967	38,396	45,094	60,337	114,329	927,949	842,758	286,978	371,482
PETROLEUM HYDROCARBONS	183,214	234,001	266,895	210,042	236,590	121,783	143,090	219,545	216,917	985
PETROLEUM NAPHTHENIC OILS	320	0	12	1	9	2	3	91	325	208
PETROLEUM OIL, PARAFFIN BASED	440,464	434,878	312,359	267,704	0	310,988	344,350	342,367	283,487	367,051
PETROLEUM OIL, UNCLASSIFIED	19,674,078	18,687,636	20,063,955	24,633,153	21,723,758	20,084,263	19,797,620	15,447,561	17,656,554	17,447,935
PETROLEUM SULFONATES	1	<1	4	1	<1	<1	1	<1	<1	0
Grand Total	26,303,115	25,389,853	27,320,140	32,604,892	29,036,797	27,546,031	27,518,636	22,297,858	25,139,218	26,686,154

Table 8B. The reported **cumulative acres treated** in California with oil pesticides. (See qualifying comments on U.S. EPA B2 carcinogen and Proposition 65 listing with Table 8A.) Uses include primarily agricultural applications. Data are from the Department of Pesticide Regulation's Pesticide Use Reports.

Active Ingredient	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
COAL TAR HYDROCARBONS	0	0	0	0	0	0	0	0	0	0
HYDROTREATED PARAFFINIC SOLVENT	0	0	0	0	0	0	0	0	0	306,243
ISOPARAFFINIC HYDROCARBONS	<1	0	0	0	0	0	0	0	4,490	56,120
KEROSENE	284,864	333,112	289,469	240,080	223,822	179,961	227,734	138,896	29,561	21,672
MINERAL OIL	130,688	144,413	190,550	191,954	615,564	163,976	157,520	169,885	199,089	286,423
NAPHTHA, HEAVY AROMATIC	0	0	0	0	0	0	0	11	0	0
PETROLEUM DERIVATIVE RESIN	1,321	3	191	50	13	1	0	0	0	0
PETROLEUM DISTILLATES	340,671	440,375	369,500	299,592	265,736	223,509	274,543	213,784	210,437	236,822
PETROLEUM DISTILLATES, ALIPHATIC	0	0	0	0	0	0	0	5,104	44,494	26,131
PETROLEUM DISTILLATES, AROMATIC	66,414	53,211	12,324	19,003	2,153	7,088	6,238	1,900	3,935	1,804
PETROLEUM DISTILLATES, REFINED	4,173	3,976	5,145	6,146	6,162	12,495	42,145	48,446	35,407	39,838
PETROLEUM HYDROCARBONS	191,965	248,347	193,257	200,989	276,950	237,043	258,740	289,094	273,322	2,869
PETROLEUM NAPHTHENIC OILS	540	0	73	0	50	37	0	5,119	13,241	11,314
PETROLEUM OIL, PARAFFIN BASED	664,715	680,590	464,508	443,059	0	470,204	461,939	445,342	416,483	488,928
PETROLEUM OIL, UNCLASSIFIED	603,690	703,859	663,575	811,902	753,904	775,828	817,752	631,471	703,820	667,064
PETROLEUM SULFONATES	0	<1	<1	<1	0	<1	10	0	0	0
Grand Total	2,288,491	2,607,726	2,188,420	2,212,690	2,144,304	2,070,045	2,246,598	1,937,975	1,914,147	2,124,920

Figure 6. Use trends of oil pesticides. As a broad group, oil pesticides and other petroleum distillates are on U.S. EPA's list of B2 carcinogens or the State's Proposition 65 list of chemicals "known to cause cancer." However, these classifications do not distinguish among oil pesticides that may not qualify as carcinogenic due to their degree of refinement. Many such oil pesticides also serve as alternatives to high-toxicity chemicals. For this reason, oil pesticide data was classified separately in this report. Reported pounds of active ingredient (AI) applied includes both agricultural and reportable nonagricultural applications. The reported cumulative acres treated includes primarily agricultural applications. Data are from the Department of Pesticide Regulation's Pesticide Use Reports.



USE TRENDS OF REDUCED-RISK PESTICIDES

Table 9A. The reported **pounds** of reduced-risk pesticides applied in California. These active ingredients are contained in pesticide products that have been given reduced-risk status by U.S. EPA. Use includes both agricultural and reportable nonagricultural applications. Zero values in early years likely indicate the pesticide was not yet registered for use. Data are from the Department of Pesticide Regulation's Pesticide Use Reports.

Active Ingredient	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
1-METHYLCYCLOPROPENE	0	0	0	0	0	0	0	<1	<1	<1
ACETAMIPRID	0	0	0	0	0	0	0	0	6,434	26,628
ACIBENZOLAR-S-METHYL	0	0	0	0	0	0	0	230	1,157	1,159
AZOXYSTROBIN	0	0	0	23,851	69,232	95,723	114,968	85,600	95,827	97,516
BIFENAZATE	0	0	0	0	0	0	92	523	24,719	42,866
BISPYRIBAC-SODIUM	0	0	0	0	0	0	0	0	2,378	2,219
BUPROFEZIN	0	0	0	6,987	8,459	22,244	678	3,439	22,302	33,510
CARBO METHOXY ETHER CELL	92	184	22,994	1,032	723	638	436	543	6	0
CARFENTRAZONE-ETHYL	0	0	0	0	3,076	2,730	0	492	2,128	14,196
CINNAMALDEHYDE	0	0	0	<1	<1	6,764	10,332	4,704	806	238
CORN GLUTEN MEAL	0	0	0	0	0	2,490	4,590	2,744	1,294	8
CYPRODINIL	0	0	0	0	48,417	56,268	98,773	81,216	99,483	121,341
FENHEXAMID	0	0	0	0	0	12,386	36,240	39,583	50,073	64,535
FIPRONIL	0	0	0	<1	1	2	662	7,856	15,017	32,756
FLUDIOXONIL	0	0	0	0	551	349	568	974	5,021	7,369
FORCHLORFENURON	0	0	0	0	0	0	0	43	35	139
HEXAFLUMURON	0	<1	<1	<1	2	8	8	12	93	21
IMAZAMOX, AMMONIUM SALT	0	0	0	0	0	0	0	0	1,490	2,668
INDOXACARB	0	0	0	0	0	0	3,535	29,016	27,098	70,058
IRON PHOSPHATE	0	0	0	0	66	187	344	617	545	855
MEFENOXM	0	0	43	29,078	59,960	55,942	60,426	49,967	54,562	60,964
METHYL ANTHRANILATE	0	0	6	184	49	57	50	37	85	34
NOVALURON	0	0	0	0	0	0	0	0	2	24

Table 9A (continued). The reported **pounds** of reduced-risk pesticides applied in California.

Active Ingredient	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
OIL OF PEPPERMINT	0	0	0	0	0	0	0	<1	0	<1
OXPURINOL	0	0	0	0	0	0	<1	<1	0	0
POTASSIUM BICARBONATE	0	0	0	28	65,909	92,990	130,462	121,804	179,676	283,851
PROHEXADIONE CALCIUM	0	0	0	0	0	0	0	46	52	153
PYMETROZINE	0	0	0	0	0	18	829	1,284	1,420	2,226
PYRIPROXYFEN	0	0	0	3,220	6,072	3,096	14,040	7,663	9,782	10,796
SODIUM BICARBONATE	0	0	0	0	0	5	22	230	2,063	0
SPINOSAD	0	0	0	10,146	29,717	44,573	55,443	51,071	53,574	61,613
TEBUFENOZIDE	0	7,955	3,463	5,300	9,178	8,815	62,310	65,724	65,094	93,057
THIAMETHOXAM	0	0	0	0	0	0	0	0	10,897	10,187
TRIFLOXYSTROBIN	0	0	0	0	0	0	45,938	12,303	18,321	21,234
XANTHINE	0	0	0	0	0	0	<1	<1	0	0
Grand Total	92	8,138	26,506	79,825	301,413	405,284	640,744	567,721	751,434	1,062,221

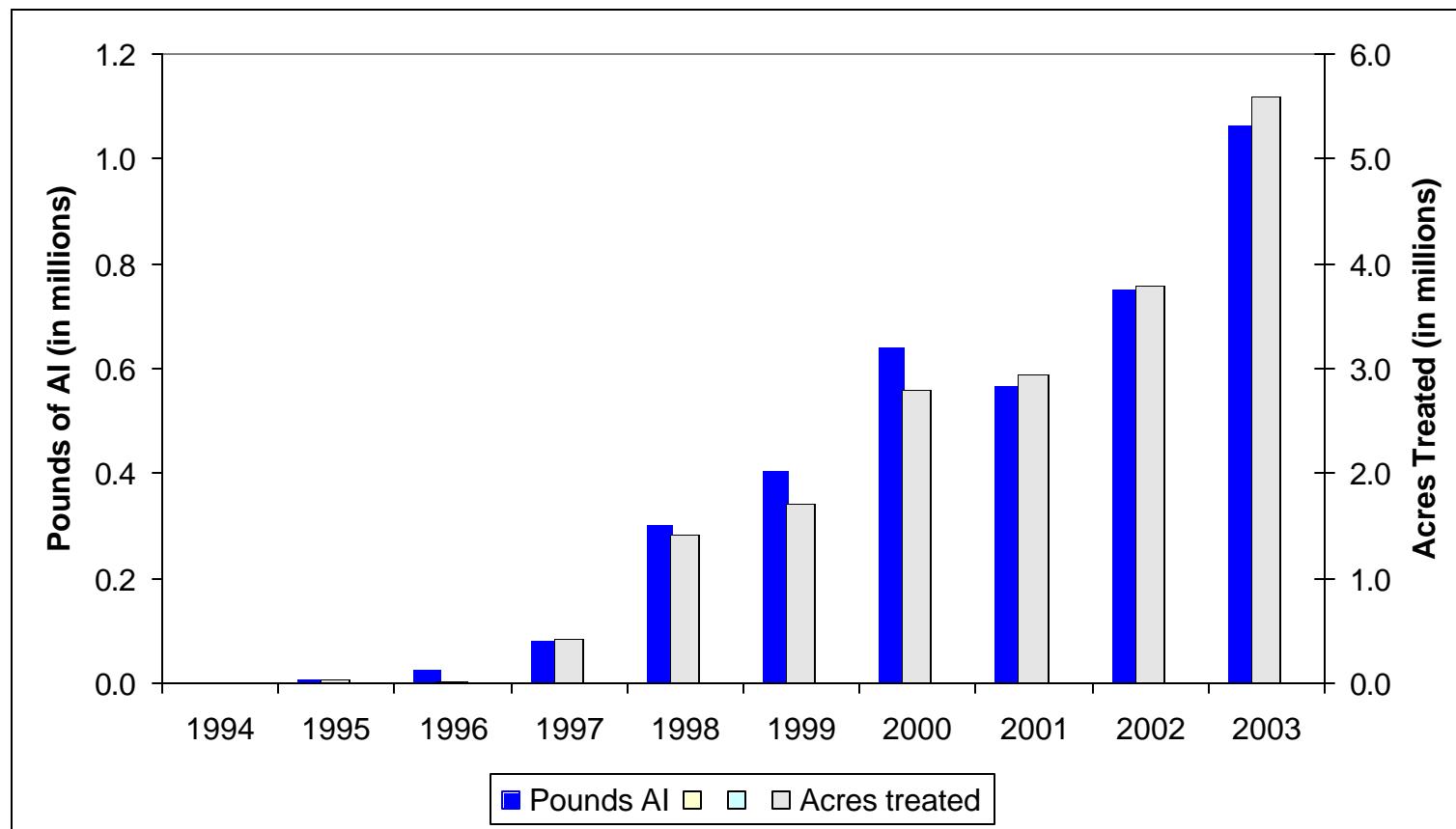
Table 9B. The reported **cumulative acres treated** of reduced-risk pesticides in California. These active ingredients are contained in pesticide products that have been given reduced-risk status by U.S. EPA. Use includes primarily agricultural applications. Zero values in early years likely indicate the pesticide was not yet registered for use. Data are from the Department of Pesticide Regulation's Pesticide Use Reports.

Active Ingredient	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
1-METHYLCYCLOPROPENE	0	0	0	0	0	0	0	3	<1	9
ACETAMIPRID	0	0	0	0	0	0	0	0	87,041	423,398
ACIBENZOLAR-S-METHYL	0	0	0	0	0	0	0	8,266	39,749	38,316
AZOXYSTROBIN	0	0	0	28,421	340,507	449,776	581,810	444,032	511,046	690,373
BIFENAZATE	0	0	0	0	0	0	249	2,173	58,876	97,369
BISPYRIBAC-SODIUM	0	0	0	0	0	0	0	0	80,499	70,514
BUPROFEZIN	0	0	0	18,623	8,382	15,801	1,966	10,012	32,716	61,238
CARBO METHOXY ETHER CELLUL	61	113	235	328	83	77	197	484	5	0
CARFENTRAZONE-ETHYL	0	0	0	0	38,578	17,800	0	7,027	16,440	167,610
CINNAMALDEHYDE	0	0	0	<1	<1	2,418	4,136	1,534	295	105
CORN GLUTEN MEAL	0	0	0	0	0	0	0	7	3	0
CYPRODINIL	0	0	0	0	122,772	186,536	314,850	282,736	346,342	412,877
FENHEXAMID	0	0	0	0	0	18,455	57,100	70,069	84,525	113,987
FIPRONIL	0	0	0	0	0	0	0	1	1	1
FLUDIOXONIL	0	0	0	0	0	1,102	343	431	21,654	29,962
FORCHLORFENURON	0	0	0	0	0	0	0	786	882	1,455
HEXAFLUMURON	0	0	0	0	0	0	0	1	0	2
IMAZAMOX, AMMONIUM SALT	0	0	0	0	0	0	0	0	34,700	60,827
INDOXACARB	0	0	0	0	0	0	33,833	390,579	365,901	900,278
IRON PHOSPHATE	0	0	0	0	205	470	852	1,036	1,929	1,253
MEFENOXM	0	0	40	153,858	360,994	335,708	406,191	273,020	283,752	308,528
METHYL ANTHRANILATE	0	0	0	0	0	0	0	0	81	56
NOVALURON	0	0	0	0	0	0	0	0	34	319

Table 9B (continued). The reported **cumulative acres treated** in California with each reduced-risk pesticide.

Active Ingredient	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
OIL OF PEPPERMINT	0	0	0	0	0	0	0	0	0	0
OXPURINOL	0	0	0	0	0	0	0	0	0	0
POTASSIUM BICARBONATE	0	0	0	11	34,010	52,110	60,330	52,654	73,894	106,955
PROHEXADIONE CALCIUM	0	0	0	0	0	0	0	156	341	852
PYMETROZINE	0	0	0	0	0	98	4,520	10,421	10,859	17,641
PYRIPROXYFEN	0	0	0	60,164	64,648	35,307	72,934	100,297	142,040	197,811
SODIUM BICARBONATE	0	0	0	0	0	8	0	0	0	0
SPINOSAD	0	0	0	128,313	384,192	541,190	680,424	694,687	731,544	806,260
TEBUFENOZIDE	0	32,418	14,449	28,620	53,705	52,379	387,464	399,966	348,320	523,303
THIAMETHOXAM	0	0	0	0	0	0	0	0	255,350	270,843
TRIFLOXYSTROBIN	0	0	0	0	0	0	198,588	201,521	278,530	312,257
XANTHINE	0	0	0	0	0	0	0	0	0	0
Grand Total	61	32,531	14,724	418,337	1,408,077	1,709,237	2,805,785	2,951,775	3,791,152	5,588,583

Figure 7. Use trends of reduced-risk pesticides. These active ingredients are contained in pesticide products that have been given reduced-risk status by U.S. EPA. Reported pounds of active ingredient (AI) applied includes both agricultural and reportable nonagricultural applications. The reported cumulative acres treated includes primarily agricultural applications. Data are from the Department of Pesticide Regulation's Pesticide Use Reports.



USE TRENDS OF BIOPESTICIDES

Table 10A. The reported **pounds** of biopesticides applied in California. Biopesticides include microorganisms and naturally occurring compounds, or compounds essentially identical to naturally occurring compounds that are not toxic to the target pest (such as pheromones). Use includes both agricultural and reportable nonagricultural applications. Zero values in early years likely indicate the pesticide was not yet registered for use. Data are from the Department of Pesticide Regulation's Pesticide Use Reports.

Active Ingredient	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
(E)-4-TRIDECEN-1-YL-ACETATE	3	12	140	76	65	67	263	182	247	254
(E)-5-DECENOL	0	12	71	737	176	246	5	2	2	295
(E)-5-DECENYL ACETATE	0	58	339	3,508	844	1,183	26	9	12	889
(R,Z)-5-(1-DECENYL) DIHYDRO-2-(3H)-FURANONE	0	<1	0	0	<1	0	<1	0	0	0
(S)-KINOPRENE	11	18	137	121	1,274	357	245	311	326	417
(Z)-11-HEXADECEN-1-YL ACETATE	0	0	0	0	0	0	0	0	35	10
(Z)-11-HEXADECENAL	0	0	0	0	0	0	0	0	35	10
(Z)-4-TRIDECEN-1-YL-ACETATE	<1	<1	4	2	2	2	9	6	8	8
(Z,E)-7,11-HEXADECADIEN-1-YL ACETATE	3	29	2	1	46	229	3	13	2	3
(Z,Z)-7,11-HEXADECADIEN-1-YL ACETATE	3	2	2	1	46	242	3	<1	3	3
1-DECANOL	1	1	1	<1	<1	<1	<1	<1	0	0
1-METHYLCYCLOPROPENE	0	0	0	0	0	0	0	<1	<1	<1
1-NAPHTHALENEACETAMIDE	72	54	99	115	283	333	217	213	88	119
ACETIC ACID	<1	0	0	0	0	0	0	0	0	<1
AGROBACTERIUM RADIOBACTER	4	6	14	28	20	7	2	1	4	3
AGROBACTERIUM RADIOBACTER, STRAIN K1026	0	0	0	0	0	0	<1	<1	1	<1
ALLYL ISOTHIOCYANATE	0	0	0	<1	0	0	<1	<1	<1	<1
AMINO ETHOXY VINYL GLYCINE HYDROCHLORIDE	0	0	0	0	0	1	<1	1	1	0
AMPELOMYCES QUISQUALIS	0	<1	3	9	40	4	4	2	<1	<1
AZADIRACHTIN	71	558	812	840	653	16,764	1,234	1,536	1,483	1,366
BACILLUS PUMILUS, STRAIN QST 2808	0	0	0	0	0	0	0	0	0	<1
BACILLUS SPHAERICUS, SEROTYPE H-5A5B, STRAIN 2362	0	0	0	1,298	4,886	2,274	2,746	7,941	4,667	10,122
BACILLUS SUBTILIS GB03	0	0	0	<1	<1	<1	<1	1	4	5
BACILLUS THURINGIENSIS (BERLINER)	476	1,562	536	179	751	115	112	335	44	11
BACILLUS THURINGIENSIS (BERLINER), SUBSP. AIZAWAI, GC-91 PROTEIN	1,936	5,115	6,520	7,406	4,273	3,017	4,419	3,953	3,972	5,024
BACILLUS THURINGIENSIS (BERLINER), SUBSP. AIZAWAI, SEROTYPE H-7	4,935	8,050	10,145	14,210	10,854	10,427	9,065	5,540	5,881	7,548
BACILLUS THURINGIENSIS (BERLINER), SUBSP. ISRAELENSIS, SEROTYPE H-14	4,619	6,827	4,059	4,423	12,963	5,038	88,039	24,795	9,778	17,335
BACILLUS THURINGIENSIS (BERLINER), SUBSP. KURSTAKI STRAIN SA-12	0	0	0	0	0	0	1,562	1,510	4,962	5,754
BACILLUS THURINGIENSIS (BERLINER), SUBSP. KURSTAKI, SEROTYPE 3A,3B	39,667	39,550	25,890	29,825	20,535	14,154	13,145	30,166	2,667	6,318
BACILLUS THURINGIENSIS (BERLINER), SUBSP. KURSTAKI, STRAIN EG 2348	2,714	3,391	3,056	1,448	4,548	1,360	1,810	738	1,228	66

Table 10A (continued). The reported pounds of biopesticides applied in California.

Active Ingredient	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
BACILLUS THURINGIENSIS (BERLINER), SUBSP. KURSTAKI, STRAIN EG2371	7,042	7,466	3,468	2,752	1,633	213	139	58	19	39
BACILLUS THURINGIENSIS (BERLINER), SUBSP. KURSTAKI, STRAIN SA-11	6,416	8,643	8,689	11,676	9,603	8,730	9,931	12,583	13,391	12,879
BACILLUS THURINGIENSIS (BERLINER), SUBSP. SAN DIEGO	10	1	3	26	8	34	18	8	1	2
BACILLUS THURINGIENSIS SUBSPECIES KURSTAKI STRAIN BMP 123	0	0	0	0	6	1	33	79	164	130
BACILLUS THURINGIENSIS SUBSPECIES KURSTAKI, GENETICALLY ENGINEERED STRAIN EG7841 LEPIDOPTERAN ACTIVE TOXIN	0	0	257	15,619	12,522	12,831	16,679	8,749	681	1,503
BACILLUS THURINGIENSIS VAR. KURSTAKI STRAIN M-200	0	0	0	0	0	0	<1	<1	0	<1
BACILLUS THURINGIENSIS VAR. KURSTAKI, GENETICALLY ENGINEERED STRAIN EG7826	0	0	0	0	0	0	6,482	14,734	439	1,527
BACILLUS THURINGIENSIS, SUBSP. AIZAWAI, STRAIN ABTS-1857	0	0	0	0	0	0	0	0	0	21,956
BACILLUS THURINGIENSIS, SUBSP. AIZAWAI, STRAIN SD-1372, LEPIDOPTERAN ACTIVE TOXIN(S)	0	0	0	0	0	3	158	498	1,295	562
BACILLUS THURINGIENSIS, SUBSP. ISRAELENSIS, STRAIN AM 65-52	0	0	0	0	0	0	0	0	9,485	29,326
BACILLUS THURINGIENSIS, SUBSP. KURSTAKI, STRAIN ABTS-351, FERMENTATION SOLIDS AND SOLUBLES	0	0	0	0	0	0	0	0	47	538
BACILLUS THURINGIENSIS, SUBSP. KURSTAKI, STRAIN HD-1	0	0	<1	57	20,771	21,652	21,081	16,917	24,388	38,698
BACILLUS THURINGIENSIS, VAR. KURSTAKI DELTA ENDOTOXINS CRY 1A(C) AND CRY 1C (GENETICALLY ENGINEERED) ENCAPSULATED IN PSEUDOMONAS FLUORESCENS (KILLED)	0	0	3,663	29,895	12,634	8,048	7,146	2,211	258	54
BEAUVERIA BASSIANA STRAIN GHA	0	0	1	573	1,243	914	913	678	1,032	715
CANDIDA OLEOPHILA ISOLATE I-182	0	0	0	305	103	55	0	0	0	0
CANOLA OIL	0	0	0	0	0	0	1	5	<1	1
CAPSICUM OLEORESIN	220	19	46	2	17	104	3	73	4	5
CASTOR OIL	4	<1	1	40	174	24	557	297	504	1,281
CINNAMALDEHYDE	0	0	0	<1	<1	6,764	10,332	4,704	806	238
CLARIFIED HYDROPHOBIC EXTRACT OF NEEM OIL	0	0	3,196	13,792	55,005	94,569	111,246	83,800	73,345	60,429
CODLING MOTH GRANULOSIS VIRUS	0	321	0	0	0	0	0	0	0	0
CONIOTHYRIUM MINITANS STRAIN CON/M/91-08	0	0	0	0	0	0	0	0	103	182
CYTOKININ	0	<1	0	0	<1	0	<1	<1	0	<1
DIHYDRO-5-HEPTYL-2(3H)-FURANONE	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
DIHYDRO-5-PENTYL-2(3H)-FURANONE	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
E-E-8,10-DODECADIEN-1-OL	214	1,067	253	431	220	21,029	6,278	6,390	5,126	1,807
E-11-TETRADECEN-1-YL ACETATE	0	0	0	3	2	548	397	65	122	131
E-8-DODECENYL ACETATE	25	38	27	46	57	66	92	73	59	113

Table 10A (continued). The reported pounds of biopesticides applied in California.

Active Ingredient	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
ENCAPSULATED DELTA ENDOTOXIN OF BACILLUS THURINGIENSIS VAR. KURSTAKI IN KILLED PSEUDOMONAS FLUORESCENS	14,341	14,535	30,809	43,815	35,129	28,435	17,904	6,913	3,174	445
ENCAPSULATED DELTA ENDOTOXIN OF BACILLUS THURINGIENSIS VAR. SAN DIEGO IN KILLED PSEUDOMONAS FLUORESCENS	0	7	13	0	34	1	6	1	6	0
ESSENTIAL OILS	1	<1	0	<1	11	<1	<1	<1	<1	<1
ETHYLENE	0	0	0	0	1	5,073	6	6	3	24
EUGENOL	0	<1	0	0	3	0	<1	0	0	0
FARNESOL	28	39	53	38	30	36	37	15	10	9
GAMMA AMINOBUTYRIC ACID	0	0	0	0	0	0	0	23	3,100	6,077
GARLIC	2,130	2,549	5,108	8,983	10,203	7,113	899	1,490	684	295
GERMAN COCKROACH PHEROMONE	0	0	0	0	0	0	0	0	<1	<1
GIBBERELLINS	30,209	21,037	21,249	23,403	23,085	20,363	21,169	19,743	25,363	20,891
GIBBERELLINS, POTASSIUM SALT	3	9	<1	1	1	15	<1	1	<1	<1
GLOCLADIUM VIRENS GL-21 (SPORES)	0	15	144	156	104	86	60	314	110	48
GLUTAMIC ACID	0	0	0	0	0	0	0	23	3,100	6,077
HYDROGEN PEROXIDE	0	0	0	0	1	15	82	1,754	2,705	2,595
HYDROPRENE	681	5,476	1,131	9,305	1,486	1,609	1,700	1,380	1,656	1,035
IBA	5	8	16	14	38	9	12	18	16	12
LAGENIDIUM GIGANTEUM (CALIFORNIA STRAIN)	87	151	<1	134	859	499	0	1	0	0
LAURYL ALCOHOL	120	580	85	207	111	7,287	486	302	249	243
LINALOOL	114	403	391	358	631	229	196	173	274	280
METARHIZIUM ANISOPLIAE, VAR. ANISOPLIAE, STRAIN ESF1	1	1	<1	3	37	15	18	15	22	<1
METHOPRENE	3,027	8,822	3,213	29,905	1,796	10,285	14,303	2,484	5,121	7,874
METHYL ANTHRANILATE	0	0	6	184	49	57	50	37	85	34
METHYL SALICYLATE	<1	0	0	0	0	0	0	<1	0	0
MUSCALURE	4	4	3	4	2	5	9	4	1	11
MYRISTYL ALCOHOL	25	117	18	42	22	1,502	99	62	51	49
MYROTHECIUM VERRUCARIA, DRIED FERMENTATION SOLIDS & SOLUBLES, STRAIN AARC-0255	0	0	0	1,097	8,496	18,824	20,869	45,917	36,280	47,037
NAA	99	41	18	21	238	14	24	10	6	5
NEROLIDOL	23	32	43	31	24	29	30	12	8	7
NITROGEN, LIQUIFIED	577,181	540,335	423,124	430,214	1,003,749	424,897	391,469	478,466	561,505	319,550
NONANOIC ACID	0	4,250	11,787	14,713	11,729	13,303	12,517	14,890	11,559	7,765
NONANOIC ACID, OTHER RELATED	0	224	620	774	617	700	659	784	608	409
NOSEMA LOCUSTAE SPORES	0	0	0	<1	<1	<1	<1	<1	<1	<1

Table 10A (continued). The reported pounds of biopesticides applied in California.

Active Ingredient	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
OIL OF ANISE	<1	0	0	0	0	0	0	<1	<1	<1
OIL OF CEDARWOOD	0	0	0	0	0	0	0	0	0	0
OIL OF CITRONELLA	1	1	0	13	5	11	1	33	0	10
OIL OF LEMONGRASS	1	<1	0	0	0	0	0	0	0	2
OIL OF MUSTARD	<1	<1	0	0	0	0	0	0	0	0
OXPURINOL	0	0	0	0	0	0	<1	<1	0	0
PAECILOMYCES FUMOSOROSEUS APOPKA STRAIN 97	0	0	0	0	0	0	0	5	0	0
PERFUME	0	0	0	0	<1	<1	<1	<1	<1	<1
POLYHEDRAL OCCLUSION BODIES (OB'S) OF THE NUCLEAR POLYHEDROSIS VIRUS OF HELICOVERPA ZEA (CORN EARWORM)	0	0	0	0	0	0	0	0	0	1
POTASSIUM BICARBONATE	0	0	0	28	65,909	92,990	130,462	121,804	179,676	283,851
PROPYLENE GLYCOL	44,863	54,137	61,455	60,421	67,530	54,281	63,627	58,293	60,369	50,440
PSEUDOMONAS FLUORESCENS STRAIN A506	<1	206	3,044	3,639	3,660	2,173	103	1,102	1,361	1,972
PSEUDOMONAS SYRINGAE STRAIN ESC-11	0	0	0	0	34	0	0	0	<1	0
PSEUDOMONAS SYRINGAE, STRAIN ESC-10	0	0	15	<1	<1	0	0	0	0	0
PUTRESCENT WHOLE EGG SOLIDS	234	19	7	15	19	136	112	140	168	186
QST 713 STRAIN OF DRIED BACILLUS SUBTILIS	0	0	0	0	0	0	882	7,201	18,869	17,324
S-METHOPRENE	67	77	127	1,806	2,651	409	371	365	863	761
SODIUM BICARBONATE	0	0	0	0	0	5	22	230	2,063	0
SODIUM LAURYL SULFATE	86	21	9	6	14	8	2	9	<1	<1
SOYBEAN OIL	42,462	98,625	25,969	26,656	16,748	59,695	41,901	27,743	31,726	33,006
STREPTOMYCES GRISEOVIRIDIS STRAIN K61	<1	21	1	2	5	2	7	2	1	1
TRICHODERMA HARZIANUM RIFAI STRAIN KRL-AG2	0	0	65	39	60	121	125	116	55	35
XANTHINE	0	0	0	0	0	0	<1	<1	0	0
Z,E-9,12-TETRADECADIEN-1-YL ACETATE	0	0	0	0	0	0	0	0	<1	0
Z,E-9,12-TETRADECADIEN-1-YL ACETATE	0	0	0	0	0	0	0	0	<1	0
Z-11-TETRADECEN-1-YL ACETATE	0	0	0	<1	<1	85	61	9	18	19
Z-8-DODECENOL	4	6	4	7	10	12	16	13	11	20
Z-8-DODECENYL ACETATE	435	659	447	777	888	1,009	1,436	1,127	908	1,737
Z-9-TETRADECEN-1-OL	0	0	0	0	0	0	0	0	<1	0
Grand Total	784,673	835,208	660,410	796,257	1,432,274	982,743	1,036,126	1,022,210	1,118,504	1,037,814

Table 10B. The reported **cumulative acres treated** of biopesticides applied in California . Biopesticides include microorganisms and naturally occurring compounds, or compounds essentially identical to naturally occurring compounds that are not toxic to the target pest (such as pheromones). Use includes primarily agricultural applications. The grand total for acres treated is less than the sum of acres for all active ingredients because some products contain more than one active ingredient. Zero values in early years likely indicate the pesticide was not yet registered for use. Data are from the Department of Pesticide Regulation's Pesticide Use Reports.

Active Ingredient	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
(E)-4-TRIDECEN-1-YL-ACETATE	70	706	5,428	3,574	2,886	3,132	12,571	9,159	11,739	10,902
(E)-5-DECENOL	0	725	1,434	2,187	1,414	1,034	784	1,316	1,206	1,360
(E)-5-DECENYL ACETATE	0	725	1,434	2,187	1,414	1,034	784	1,316	1,206	1,360
(R,Z)-5-(1-DECENYL) DIHYDRO-2-(3H)-FURANONE	0	0	0	0	1	0	0	0	0	0
(S)-KINOPRENE	55	44	341	179	2,610	888	600	847	869	754
(Z)-11-HEXADECEN-1-YL ACETATE	0	0	0	0	0	0	0	0	1,053	476
(Z)-11-HEXADECENAL	0	0	0	0	0	0	0	0	1,053	476
(Z)-4-TRIDECEN-1-YL-ACETATE	70	706	5,428	3,574	2,886	3,132	12,571	9,159	11,739	10,902
(Z,E)-7,11-HEXADECADIEN-1-YL ACETATE	588	5,535	2,295	279	82	148	171	128	87	38
(Z,Z)-7,11-HEXADECADIEN-1-YL ACETATE	588	2,120	2,295	279	82	148	171	128	87	38
1-DECANOL	0	0	0	0	0	0	0	0	0	0
1-METHYLCYCLOPROPENE	0	0	0	0	0	0	0	3	<1	9
1-NAPHTHALENEACETAMIDE	695	812	1,784	1,820	5,211	5,418	4,135	3,690	1,705	2,355
ACETIC ACID	23	0	0	0	0	0	0	0	0	734
AGROBACTERIUM RADIOBACTER	2,517	2,110	6,048	1,284	5,954	1,517	1,072	514	500	365
AGROBACTERIUM RADIOBACTER, STRAIN K1026	0	0	0	0	0	0	4	325	355	716
ALLYL ISOTHIOCYANATE	0	0	0	2	0	0	0	1	0	36
AMINO ETHOXY VINYL GLYCINE HYDROCHLORIDE	0	0	0	0	75	142	1	6	10	0
AMPELOMYCES QUISQUALIS	0	366	4,566	18,628	15,039	8,363	7,156	2,193	540	332
AZADIRACHTIN	5,630	51,215	76,386	70,086	64,239	103,078	71,362	73,876	92,133	79,478
BACILLUS PUMILUS, STRAIN QST 2808	0	0	0	0	0	0	0	0	0	1
BACILLUS SPHAERICUS, SEROTYPE H-5A5B, STRAIN 2362	0	0	0	104	84	39	0	0	0	0
BACILLUS SUBTILIS GB03	0	0	0	0	0	0	0	0	0	0
BACILLUS THURINGIENSIS (BERLINER)	18,412	12,305	8,368	6,286	4,437	5,561	3,345	16,813	2,738	2
BACILLUS THURINGIENSIS (BERLINER), SUBSP. AIZAWAI, GC-91 PROTEIN	42,378	108,867	137,786	146,197	82,473	60,262	74,282	71,531	73,888	90,285
BACILLUS THURINGIENSIS (BERLINER), SUBSP. AIZAWAI, SEROTYPE H-7	46,069	68,505	84,793	109,951	86,430	85,564	65,923	41,378	45,129	54,037
BACILLUS THURINGIENSIS (BERLINER), SUBSP. ISRAELENSIS, SEROTYPE H-14	1,761	738	3,357	4,289	5,242	3,221	2,434	1,964	4,907	14,525
BACILLUS THURINGIENSIS (BERLINER), SUBSP. KURSTAKI STRAIN SA-12	0	0	0	0	0	0	9,474	11,773	43,337	54,540
BACILLUS THURINGIENSIS (BERLINER), SUBSP. KURSTAKI, SEROTYPE 3A,3B	400,394	574,228	435,707	486,699	342,525	249,709	245,114	141,868	56,866	67,211
BACILLUS THURINGIENSIS (BERLINER), SUBSP. KURSTAKI, STRAIN EG 2348	16,675	27,972	22,742	11,590	22,097	9,280	11,891	5,818	8,214	384

Table 10B (continued). The reported **cumulative acres treated** in California with each biopesticide.

Active Ingredient	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
BACILLUS THURINGIENSIS (BERLINER), SUBSP. KURSTAKI, STRAIN EG2371	56,536	62,435	32,471	19,739	11,015	1,684	845	439	134	338
BACILLUS THURINGIENSIS (BERLINER), SUBSP. KURSTAKI, STRAIN SA-11	104,848	134,225	139,051	175,772	161,858	152,834	143,643	174,400	180,617	158,413
BACILLUS THURINGIENSIS (BERLINER), SUBSP. SAN DIEGO	3	0	4	100	6	20	18	7	2	3
BACILLUS THURINGIENSIS SUBSPECIES KURSTAKI STRAIN BMP 123	0	0	0	0	87	7	687	1,913	6,279	3,013
BACILLUS THURINGIENSIS SUBSPECIES KURSTAKI, GENETICALLY ENGINEERED STRAIN EG7841 LEPIDOPTERAN ACTIVE TOXIN	0	0	1,377	87,123	81,541	83,094	118,598	55,515	5,061	8,479
BACILLUS THURINGIENSIS VAR. KURSTAKI STRAIN M-200	0	0	0	0	0	0	2	0	0	1
BACILLUS THURINGIENSIS VAR. KURSTAKI, GENETICALLY ENGINEERED STRAIN EG7826	0	0	0	0	0	0	30,603	76,935	2,571	8,493
BACILLUS THURINGIENSIS, SUBSP. AIZAWAI, STRAIN ABTS-1857	0	0	0	0	0	0	0	0	0	34,164
BACILLUS THURINGIENSIS, SUBSP. AIZAWAI, STRAIN SD-1372, LEPIDOPTERAN ACTIVE TOXIN(S)	0	0	0	0	0	32	1,561	4,718	10,656	4,989
BACILLUS THURINGIENSIS, SUBSP. ISRAELENSIS, STRAIN AM 65-52	0	0	0	0	0	0	0	0	5	1
BACILLUS THURINGIENSIS, SUBSP. KURSTAKI, STRAIN ABTS-351, FERMENTATION SOLIDS AND SOLUBLES	0	0	0	0	0	0	0	0	1,310	924
BACILLUS THURINGIENSIS, SUBSP. KURSTAKI, STRAIN HD-1	0	0	24	2,718	202,653	217,136	199,377	170,574	138,223	124,389
BACILLUS THURINGIENSIS, VAR. KURSTAKI DELTA ENDOTOXINS CRY 1A(C) AND CRY 1C (GENETICALLY ENGINEERED) ENCAPSULATED IN PSEUDOMONAS FLUORESCENS (KILLED)	0	0	6,387	43,741	23,196	14,779	14,698	4,622	546	111
BEAUVERIA BASSIANA STRAIN GHA	0	0	3	1,459	2,991	25,510	3,399	2,853	3,673	2,887
CANDIDA OLEOPHILA ISOLATE I-182	0	0	0	0	0	0	0	0	0	0
CANOLA OIL	0	0	0	0	0	0	2	2	2	2
CAPSICUM OLEORESIN	1,055	1,048	582	443	2,762	1,799	261	254	149	318
CASTOR OIL	0	0	0	<1	0	<1	1	0	0	0
CINNAMALDEHYDE	0	0	0	<1	<1	2,418	4,136	1,534	295	105
CLARIFIED HYDROPHOBIC EXTRACT OF NEEM OIL	0	0	7,526	13,537	22,092	45,247	49,142	36,602	34,133	38,314
CODLING MOTH GRANULOSIS VIRUS	0	448	0	0	0	0	0	0	0	0
CONIOTHYRIUM MINITANS STRAIN CON/M/91-08	0	0	0	0	0	0	0	0	935	1,352
CYTOKININ	0	0	0	0	82	0	3	0	0	0
DIHYDRO-5-HEPTYL-2(3H)-FURANONE	0	0	0	20	0	0	0	0	0	0
DIHYDRO-5-PENTYL-2(3H)-FURANONE	0	0	0	20	0	0	0	0	0	0
E,E-8,10-DODECADIEN-1-OL	3,001	3,880	3,811	3,696	4,300	4,514	10,407	10,381	11,841	21,217
E-11-TETRADECEN-1-YL ACETATE	0	0	0	13	2,171	54,460	38,834	14,063	16,870	10,335
E-8-DODECENYL ACETATE	4,539	3,870	6,045	9,932	11,791	23,549	22,721	33,383	33,602	39,198

Table 10B (continued). The reported **cumulative acres treated** in California with each biopesticide.

Active Ingredient	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
ENCAPSULATED DELTA ENDOTOXIN OF BACILLUS THURINGIENSIS VAR. KURSTAKI IN KILLED PSEUDOMONAS FLUORESCENS	34,056	35,755	69,222	96,678	83,238	59,905	32,372	15,188	7,525	1,160
ENCAPSULATED DELTA ENDOTOXIN OF BACILLUS THURINGIENSIS VAR. SAN DIEGO IN KILLED PSEUDOMONAS FLUORESCENS	0	4	1	0	19	7	6	4	<1	0
ESSENTIAL OILS	10	0	0	0	0	0	6	268	0	0
ETHYLENE	0	0	0	0	0	2	0	0	0	0
EUGENOL	0	0	0	0	1	0	0	0	0	0
FARNESOL	15,121	17,721	22,113	16,837	12,543	43,212	25,673	8,495	6,584	5,451
GAMMA AMINOBUTYRIC ACID	0	0	0	0	0	0	0	320	43,652	87,153
GARLIC	4,763	3,976	6,586	24,333	12,403	7,376	4,725	2,407	2,756	828
GERMAN COCKROACH PHEROMONE	0	0	0	0	0	0	0	0	0	0
GIBBERELLINS	414,837	440,001	416,073	455,572	487,195	439,529	464,750	387,488	423,330	430,988
GIBBERELLINS, POTASSIUM SALT	479	903	101	184	70	1,429	8	188	22	59
GLIOCLADIUM VIRENS GL-21 (SPORES)	0	1	21	14	29	12	8	768	6	0
GLUTAMIC ACID	0	0	0	0	0	0	0	320	43,652	87,153
HYDROGEN PEROXIDE	0	0	0	0	0	5	21	485	633	802
HYDROPRENE	0	0	0	0	1	1	<1	1	0	0
IBA	187	139	104	410	1,319	1,236	266	124	244	232
LAGENIDIUM GIGANTEUM (CALIFORNIA STRAIN)	0	0	<1	0	0	0	0	0	0	0
LAURYL ALCOHOL	2,807	3,028	1,798	2,858	2,886	2,666	8,038	6,429	4,635	4,791
LINALOOL	0	0	0	0	0	0	0	0	0	0
METARHIZIUM ANISOPLIAE, VAR. ANISOPLIAE, STRAIN ESF1	0	0	0	0	0	0	0	0	0	0
METHOPRENE	35	86	65	11	23	58	38	50	0	359
METHYL ANTHRANILATE	0	0	0	0	0	0	0	0	81	56
METHYL SALICYLATE	0	0	0	0	0	0	0	0	0	0
MUSCALURE	361	794	1,439	699	979	292	435	189	121	2,283
MYRISTYL ALCOHOL	2,807	3,028	1,798	2,858	2,886	2,666	8,038	6,429	4,635	4,791
MYROTHECIUM VERRUCARIA, DRIED FERMENTATION SOLIDS & SOLUBLES, STRAIN AARC-0255	0	0	0	104	1,514	3,348	3,173	4,392	3,926	4,390
NAA	28	33	41	364	542	788	172	102	72	75
NEROLIDOL	15,121	17,721	22,113	16,837	12,543	43,212	25,673	8,495	6,584	5,451
NITROGEN, LIQUIFIED	0	0	0	0	0	0	0	0	0	0
NONANOIC ACID	0	674	518	294	645	573	496	495	443	446
NONANOIC ACID, OTHER RELATED	0	674	518	294	645	573	496	495	443	446
NOSEMA LOCUSTAE SPORES	0	0	0	0	7	14	2	9	0	35

Table 10B (continued). The reported **cumulative acres treated** in California with each biopesticide.

Active Ingredient	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
OIL OF ANISE	0	0	0	0	0	0	0	0	0	0
OIL OF CEDARWOOD	0	0	0	0	0	0	0	0	0	0
OIL OF CITRONELLA	0	0	0	6	80	24	1	0	0	0
OIL OF LEMONGRASS	0	0	0	0	0	0	0	0	0	36
OIL OF MUSTARD	0	0	0	0	0	0	0	0	0	0
OXPURINOL	0	0	0	0	0	0	0	0	0	0
PAECILOMYCES FUMOSOROSEUS APOPKA STRAIN 97	0	0	0	0	0	0	0	13	0	0
PERFUME	0	0	0	0	0	0	70	0	0	0
POLYHEDRAL OCCLUSION BODIES (OB'S) OF THE NUCLEAR POLYHEDROSIS										
VIRUS OF HELICOVERPA ZEA (CORN EARWORM)	0	0	0	0	0	0	0	0	0	293
POTASSIUM BICARBONATE	0	0	0	11	34,010	52,110	60,330	52,654	73,894	106,955
PROPYLENE GLYCOL	662,069	901,000	1,008,762	1,053,200	1,147,506	924,156	998,115	780,442	726,172	763,911
PSEUDOMONAS FLUORESCENS, STRAIN A506	8	990	16,951	26,617	29,656	15,760	1,443	11,668	13,126	16,945
PSEUDOMONAS SYRINGAE STRAIN ESC-11	0	0	0	0	17	0	0	0	0	0
PSEUDOMONAS SYRINGAE, STRAIN ESC-10	0	0	0	0	0	0	0	0	0	0
PUTRESCENT WHOLE EGG SOLIDS	1,047	68	0	0	0	0	0	0	0	0
QST 713 STRAIN OF DRIED BACILLUS SUBTILIS	0	0	0	0	0	0	2,154	15,205	40,573	54,553
S-METHOPRENE	0	0	0	0	505	<1	567	951	166	21
SODIUM BICARBONATE	0	0	0	0	0	8	0	0	0	0
SODIUM LAURYL SULFATE	0	<1	0	0	48	0	16	0	29	0
SOYBEAN OIL	64,450	86,291	16,839	22,476	10,427	13,609	12,837	11,254	18,627	15,359
STREPTOMYCES GRISEOVIRIDIS STRAIN K61	<1	13	20	115	34	27	83	50	17	14
TRICHODERMA HARZIANUM RIFAI STRAIN KRL-AG2	0	0	<1	69	369	456	885	1,048	293	466
XANTHINE	0	0	0	0	0	0	0	0	0	0
Z,E-9,12-TETRADECADIEN-1-YL ACETATE	0	0	0	0	0	0	0	0	13	0
Z-11-TETRADECEN-1-YL ACETATE	0	0	0	13	2,171	54,460	38,834	14,063	16,870	10,335
Z-8-DODECENOL	4,539	3,870	6,045	9,932	11,791	23,549	22,721	33,383	33,602	39,198
Z-8-DODECENYL ACETATE	4,539	3,870	6,045	9,932	11,791	23,549	22,721	33,383	33,602	39,198
Z-9-TETRADECEN-1-OL	0	0	0	0	0	0	0	0	13	0
Grand Total	1,902,581	2,548,349	2,547,048	2,919,080	2,989,986	2,727,563	2,757,736	2,265,533	2,154,413	2,328,345

Figure 8. Use trends of biopesticides. Biopesticides include microorganisms and naturally occurring compounds, or compounds essentially identical to naturally occurring compounds that are not toxic to the target pest (such as pheromones). Reported pounds of active ingredient (AI) applied includes both agricultural and reportable nonagricultural applications. The reported cumulative acres treated includes primarily agricultural applications. Data are from the Department of Pesticide Regulation's Pesticide Use Reports.

